The American Economic Review

Vol. XVIII, No. 1 SUPPLEMENT March, 1928

Papers and Proceedings

of the

Fortieth Annual Meeting

of the

American Economic Association

WASHINGTON, D.C.

DECEMBER, 1927

Edited by the Secretary of the Association

Publication Offices: Menasha, Wisconsin, and Evanston, Illinois.

Subscriptions: American Economic Association, Evanston, Illinois.

Printed by
The George Banta Publishing Company

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[1] Will be published by American Statistical Association.
[2] No manuscript submitted.

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[3] Will be published by American Association for Labor Legislation.
[4] Will be published by American Statistical Association.
[5] Will be published in the March number of the AMERICAN ECONOMIC REVIEW.
[6] Will be published by American Farm Economic Association.

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[7] No manuscript submitted.

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[a] No manuscript submitted.
[b] Entire session will be published by the Stable Money Association.

ROUND TABLE DISCUSSIONS

LAND ECONOMICS

RICHARD T. ELY, *Chairman*

R. T. ELY.—By land we mean natural resources and land economics is the science that "deals with those human relationships among men which arise out of the utilization of land." Old economic treatises have given less attention to land than to the other factors of production and even their treatment of land income under the term rent is far removed from reality.

Land economics gives a new approach to old questions. Take taxation, for example. Professor J. V. Van Sickle approaches the subject from the point of view of the land economist in his article in the *Quarterly Journal of Economics,* November, 1927, when he discusses taxation in the light of land classification. Other similar problems suggest themselves at once, such as the relation of taxation to the conservation of our forest resources, to the agricultural surplus, to our excessive urban expansion, to the housing question. The mere mention of these problems indicates the significance of the contribution that land economics has to make.

A still larger conception of its scope is to be had when we realize the close relationship existing between all industries and our natural resources. The railways serve as a conspicuous example; also the construction industry. Land economics is contributing to the development of the economic aspects of these and other industries, particularly as they relate to the ownership and utilization of natural resources and in so doing is enriching the whole field of economics of which it is a part.

R. M. HAIG.—City and regional planners today are genuinely concerned about the economic and financial soundness of their proposals. Their "plan" rests upon assumptions regarding land uses and consists largely of suggestions for public works designed to give each section of the area an equipment of transportation facilities, streets and boulevards, bridges and tunnels, parks and playgrounds, etc., appropriate to the uses to which the land is supposed to be best adapted. The construction of these public works involves large costs. The economic soundness of the proposals is to be measured by comparing these costs with all the benefits produced. The program of public works should be pushed to the point where the benefits no longer offset the costs. But to what extent can the benefits be identified and traced? To what extent do they attach to land? To what extent should the land be levied upon specifically to meet the costs of the public works? Can and should the method of financing the improvements be so arranged as to supply in itself a constant and accurate check upon the character of and the extent to which the program of improvements should be carried out? Can and should the financial plan adopted to meet the cost of the improvements be made to operate as a positive force making for rationality in the order and character of land utilization?

Three general methods of paying for public improvements are in com-

mon use: the pricing method, the special assessment method, and the general taxation method. Under the pricing method the services of the improvement are sold to the user virtually like so much merchandise, as when the cost of a system of water mains is financed by selling the water at so much per cubic foot or when the cost of a subway is met from fares.

It is a fact, observed and recorded many times, that the construction of a public improvement, such as a bridge, a subway, or a tunnel, is often accompanied by profound effects on the selling prices of land served by the improvement, even though the entire cost of the improvement is to be recovered through tolls or fares. What is the explanation of such behavior of land prices? The investigator, seeking to answer this question, may subdivide it into four or more specific questions.

First: Is the increase merely a flash of speculative fever? Doubtless in many cases a minor part of the explanation is to be found here.

Second: Is this increase caused by a shortage in the supply of such public works? If the bridges, tunnels, and subways, so priced as to meet their full costs, were liberally constructed whenever a sufficiently large group desired the improvement, would their construction be accompanied by any such increase of land values? If so, an increase of such improvements to the economically-sound limit would be expected to bring about the disappearance of a large portion of the new land values.

Third: Does the increase represent in part a redistribution of previously existing values, being compensated for by declines elsewhere in the area? One might, on abstract grounds, expect something of this sort with a fairly constant population and a constant demand for land but in New York City, with its rapid rate of growth, it is not easy to find convincing evidence of compensating decrements.

Fourth: To what extent does the increase in values represent purely neighborhood readjustments? It may be the general expectation, taken into account in the buying and selling of lots, that, at about a certain time, a subway line will be constructed through a certain section of the city. But until the route is definitely decided and the points for the stations are definitely established, the local pattern of values cannot be arranged. The elimination of the uncertainty might increase the sum total of land values. These decisions are more or less arbitrary and their mere announcement undoubtedly inaugurates a process of precipitation of values which drops unearned increments into the laps of those who chance to be fortunately situated with reference to the stations.

The discussion thus far has assumed the adoption of a simple pricing policy of meeting the costs of the improvements. Tolls, fares or charges, it is assumed, will be fixed at a point which will exactly cover the operating costs and the debt service of the bridges and subways. This question, however, arises: In view of the behavior of land values, is the policy of pricing the services to cover the costs the sound and desirable one? Should the increase in the value of the land be considered to be caused by the improvement and should they be recouped and applied toward the cost of the improvement, reducing the price of the service by a like amount?

But there are still further complications. Is a pricing policy which charges five cents alike for a ride of thirty miles and for a ride of thirty rods conducive to a well-ordered and economically sound program of urban land utilization, or will it tend to subsidize the utilization of land which is economically unripe, at the expense of the land which is ready for utilization?

In view of the questions which have been raised regarding the character of the increases in land values which have accompanied the construction of public improvements, it must be clear that this is no simple matter. Its consideration involves a review of the other two methods of paying for public improvements; namely, special assessments and general taxation. When one searches the literature of public finance for aid in an attempt to analyze the behavior of land values when an area is being equipped with public works which are financed only partly or not at all by the method of pricing, one finds the cupboard practically bare. For example, special assessments, according to Rosewater, are the imposition laid upon property owners in order to defray the expenses "in those numerous cases where municipal improvements result in distinct and traceable advances in the value of adjacent real estate."[1] This definition, however, assumes an answer to the question which is here being propounded. What kinds of municipal improvements result in distinct and traceable advances in the value of land and under what circumstances? The books do not analyze this question.

If one compiles a list of the kinds of municipal improvements which are financed by special assessments, qualifying for the use of this special assessment method on the ground that they "result in distinct and traceable advances" in the value of real estate, one finds one has a strange assortment. These municipal improvements range from an asset as permanent as the road bed of a street to a service as ephemeral as the sprinkling of an asphalt pavement on a hot summer day. It may fairly be asked whether there is anything among the desires of civilized man which may conceivably result in distinct and traceable advances in the value of real estate if offered in conjunction with real estate and financed entirely by special assessments. To the extent that desired goods and services are prepaid by the owner of the plot, selling prices of land can be increased and these goods and services virtually resold as merchandise. By definition, the municipal improvement must be capable of being shifted. Apparently anything can be financed in this manner to whose utilization the ownership or lease of the land can be made a condition, provided that thing is in demand by the people seeking the land. Of course, they will not pay more for it than the amount they would be forced to pay if they selected some other plot in all other respects similar. But within these general limitations, it seems possible to build up the selling value of land indefinitely.

In analyzing the possibilities of increases in land values through this process of prepaying the costs of improvement and recouping by a mark-up of real estate prices, the discussion has been in terms of "advances" in values. "Advances" from what? From zero? From some previous level? What has determined the previous level? Do the various advances stand in

[1] *Special Assessment*, (New York, 1893), p. 9.

a causal relationship to the final level? May the construction of an improvement financed entirely by special assessments be accompanied by phenomena in the selling value of land similar to those suggested above in connection with improvements completely financed by pricing? May there be speculative fevers, scarcity premiums, redistributions of existing values, etc.?

In the case of urban land, it has been customary to note that fertility is an insignificant element and to assume that consequently the selling value of city lots is pure, or almost pure, site value. Is it not likely that this type of value is in many cases a relatively small element in the selling prices of land as compared with the other elements? It is customary, of course, to segregate the value of buildings from the value of land. The question raised is whether, in what is ordinarily described as land value, there are important elements which deserve to be classified with the buildings, rather than with the pure site value. Whatever the facts would show, if we had the facts, regarding the relative importance of pure site values in the selling prices of urban land, it seems clear that the level of such site values is determined by considerations quite apart from the improvements which are necessary to clear the land of obstacles.

Refraining from entering into a discussion of the determining causes of the theoretical level of pure site value, attention is directed to the behavior of land prices as the obstacles are removed under the special assessment plan. Let it be assumed that the special assessment technique is perfect and that each lot's true share of the costs of obstacle removal is charged to it in full. The advances in prices which would follow as the result of the improvement would be limited by the level of bare site value. Whether the advance had been sufficient to meet the costs of the improvements would depend upon the degree of accuracy with which the costs that the land would have to bear in connection with the removal of obstacles had been estimated by buyers and sellers. The fairness of using special assessments for such purposes would then depend largely upon whether or not by its announced policy the city had given due notice. If special assessments were expected, they would be allowed for in the price at which land changed hands.

A careful analysis should be made of the particular kinds of public improvements which fall within the limiting influences of the level of pure site values. This problem is bristling with difficulties. The acquisition of the roadbed and the grading of streets are promising candidates for inclusion. But this cannot be said of street paving, sprinkling, lighting, and cleaning. One is tempted to apply the old test of the permanence of the improvement. The level would then be described as toward which the values would move upward as the permanent improvements were made and toward which the values would move downward as the depreciable improvements which had been paid for wore out.

There seems to be a level toward which land values tend to rise as natural obstacles to the utilization of land are removed. The height of this level fixes the economic limit for expenditures for public improvements whose effect is to remove or overcome these obstacles. Above this site value level

may be erected a superstructure of value, consisting of prepayments for various goods and services in demand by the occupiers of the land and the enjoyment of which can be made an incident of tenure. The limits applying to this superstructure are quite different from those applying to improvements for obstacle removal.

To the city planner, then, one may reply that the extent to which he may properly depend upon special assessments depends largely upon what the people have come to expect in the way of special charges on the land for obstacle removal and upon what one can sell them in the way of "superstructure."

Many improvements commonly financed by special assessments could conceivably be priced directly to the user without the formality of imparting an increased value to the land and of then proceeding to recover it. In many cases the real beneficiaries can be identified and the extent of their benefit more accurately determined near the source (as when the subway rider pays his fare) than later in the process after the advantage of a service rendered below cost has been reflected in land values.

The property tax is depended upon by American municipalities generally for the bulk of their general tax revenue and this tax is rapidly becoming merely a real estate tax. There is little correspondence between the tax bill rendered on individual property owners in American cities and the value of the services specifically rendered to them. The orthodox analysis of the incidence of the real estate tax has been formulated with almost no regard to the purposes for which the revenue is expended. If the levy of a certain rate on real estate carries with it an implied promise to supply public improvements from the proceeds of that rate, improvements which would otherwise be financed by prices or by special assessments, can it be fairly concluded that land values will be depressed by an amount equal to the capitalization of the tax rate?

Since this is a round table for the discussion of problems, the speaker may be forgiven for feeling justified in raising issues rather than disposing of them. The purpose of the paper has been accomplished if it has made clear that our present analysis of the behavior of urban land values is quite inadequate to serve as the basis for the formulation of a sound and defensible program for financing a comprehensive city plan. Here lies a group of unsolved problems in the economics of land planning, to which it would be well for a group of economists, equipped with the technique of modern quantitative research, to address themselves.

B. H. Hibbard.—The remark is frequently heard nowadays that it is too late to institute a program of land classification. Two replies may be made to this statement. In the first place, we have had a land classification in progress for a long time and there should be no disposition to criticize it. The only trouble is that it is inadequate. In the second place, a careful view of the situation will dispel any notion that the time for taking stock of the land supply is past. A plan to guide settlement may no longer have the great possibilities it once had but the government still owns about 170,000,000 acres of land, some of which is useful for agriculture of

various kinds and some for its mineral or recreational or water power facilities. Furthermore, this publicly owned land is being continually augmented as privately owned land drops back into public hands, largely as a result of delinquent taxes.

It is often said that this land is of too little value to warrant an inventory. The question is: Has this great area been surveyed accurately enough for us to determine what is the best disposition of it? A land policy is by no means out of date.

For example, in the lake states where land has been surrounded by settlement, and itself is partly settled, a very complete survey is required, because this land is near markets and is available for any one of a half-dozen uses to which it may be adapted. In the semi-arid country, where markets are farther away, and so far as is known, the uses are more limited, a reconnaissance survey with a view to economic classification, rather than a complete and final survey, is called for. Again, what we want is a reason for classification in advance of the work, in order that the classification may serve the highest purpose.

What has been said applies mainly to agricultural land. The argument applies with equal force, and with even more point, to mineral lands of all kinds. It applies also to urban land. Indeed, in urban land management much has already been done along the line of scientific classification of city land, both that in use and that to be brought into use. Planning and zoning are new forces which have come within a few years to occupy a large place in the advices of most of our cities.

J. V. Van Sickle.—Under individual initiative wastes in land utilization have resulted. They are due to certain limitations upon the working of laissez faire. These limitations should be clearly recognized, because they afford the theoretical basis for a public land policy and at the same time give valuable indications as to the proper scope of such a policy.

There are at least three important limitations. The first of these is due to the impossibility, under certain circumstances, of imposing upon the individual all the cost imputable to his action. The second limitation is due to an individual's inability to collect from all those benefited by his action. The third limitation arises out of the separation of ownership and control of real estate, i.e. out of the relationship of landlord and tenant.

In order to remedy these limitations on the proper functioning of laissez faire greater public control is economically justifiable, but we should bear in mind that our chief reliance must continue to be upon private initiative. Our aim should be to reduce the need for public control to a minimum, thereby reducing the scope of public control to a minimum. There are two important ways of doing this. One is by increasing the knowledge available to private individuals; the other is by remedying those defects in our taxing system which contribute to bad land utilization.

The beneficent results of laissez faire follow only where the individual acts on the basis of adequate knowledge. Increased public expenditures for gathering and disseminating facts are urgently needed. They will at once

provide the indispensable basis for intelligent land planning and at the same time minimize its necessary scope.

The second important way of minimizing the scope of land planning is by remedying certain defects in our local general property tax. In general, our local tax system affects adversely lands marginal between two uses, forcing them out of one use before they are needed in a higher use. In this process of shifting from one use to another there are individual losses as well as social losses. Primarily because of the individual losses there has developed a popular demand for zoning. The effort is made to protect a district not only from nuisances but also from uses that enhance land values. Thus the scope of land planning is unnecessarily enlarged with increased risks of social waste. It may permanently shunt business expansion into less desirable channels. Tremendous foresight, responsibility, and flexibility are necessary, if zoning is not to bring in its wake unlooked for social costs.

The likelihood that it will bring such costs in its wake can be greatly reduced by the substitution of a classified land tax for our existing method. In the case of urban land the classification would be the same as the zoning classification. Within each district the tax would be based upon values determined by the predominant use, instead of upon market values. Between assessment periods the intrusion of a higher use would in no wise increase the burden on adjacent properties. Hence, there would be no need to ban any more productive use simply because it tended to enhance land values, provided that in other respects it was compatible with the prevailing use. Thus the scope of zoning could be reduced.

Moreover, the slow intrusion of higher uses would safeguard the community from the danger of any serious warping of urban expansion out of the most desirable pattern, and at the same time afford the zoning authority valuable evidence regarding the time for and the extent of reclassification of districts. The task of the zoning authority would rather be that of ratifying what constructive private initiative had already decreed.

Miss Harlean James.—There is need for a co-ordination of urban zoning with a comprehensive regional plan, that will take account of highway plans, traffic regulations, and be adapted to the topography of the city and its environment.

In his discussion of the financing of improvements in urban areas, Professor Haig has raised some exceedingly interesting questions. The "user" principle of paying for public improvements presents a fairly painless method but, as Professor Haig indicates, it is not necessarily equitable in its relation to land values directly traceable to the improvement.

On the other hand, the special assessment plan may, and often does, bring a pyramiding of special assessments for different improvements which require a property owner to pay six or seven assessments for simultaneous public improvements which the owner may or may not have desired. Thus we see that this plan is capable of a haphazard application hardly scientific. In the laying out of new subdivisions there is much to be said for a law which requires the utilities to be installed before lots can be sold for building purposes. Sooner or later the purchaser of an unimproved lot will be called

upon to pay for the improvements, whether by special assessment or general taxation.

When we consider the general land tax, based on the supposed capital sales value, we have even less basis for knowing how much of the total amount collected should be assigned for public improvements in the different sections of the city. But we are learning that bare sites, without the needed utilities, are worth but a small fraction of the sale value of improved sites.

We have not the economic data at hand to set up an equitable financial distribution of the cost burden of public improvements on the land, but we can say with certainty that we need a closer co-ordination between the administration of land planning and the financing of municipal improvements.

L. C. Gray.—In the field of land utilization there is need for continued study of the relationship of national requirements for various uses to available resources. Land economists have laid much stress on the need for land classification. A study of an extensive character is needed which would indicate the lands physically adapted to particular purposes.

While the phrase regional planning has come to be associated with studies restricted to the suburban territory immediately encompassing a city, for lack of a better phrase I have extended its meaning to apply to the development of a program of utilization for rural territory. When the latter type of project gets under way the task of regional planning will be started from two separate extremes, the city and the country. The two planning movements, however, will have a territory in common. The city planning movement must take account of water sheds for its supply, and may well take into consideration nearby forests, beaches and other recreational areas, suburban trucking and milk supply territory, and what may be called the territory of semi-agricultural commuting population, as well as the strictly suburban areas. The country rural planning movement must take cognizance of those uses of rural land which are determined or affected by nearby cities.

Undoubtedly much greater progress has been made in developing systematic and efficient methods of appraising city real estate than in the case of farm and forest real estate. It is unnecessary to elaborate again the importance of inquiries in this field as a means of facilitating sound credit and taxation policy, developing more effective systems of farm accounting and organization, promoting a better understanding of the factors influencing the prosperity of farmers and their progress from tenancy to ownership, and throwing light on such controversial issues as the tariff and railway rates.

One of the most important tasks now confronting land economics is a reformulation of fundamental theory with respect to land in the light of statistical data. A great mass of accounting and statistical data have become available, and should be employed to determine the facts.

The Ricardian theory of rent, as subsequently restated by Mill, Marshall, and others, was not only a doctrine of valuation and an important segment in a philosophy of distribution, but it was also a theory of land utilization.

Briefly stated, the kernel of the doctrine is that the area in use tends to reach an equilibrium at the point where output and input are equal, to use recently coined terms, and tends to expand or contract respectively as output exceeds or falls short of input. Marshall found it desirable to allow for the influence of expected increment in land value, although this was probably intrinsic in the Ricardian theory of long time, rather than current, relationship of output and input. However, after eight years observation of the success of supersalesmanship and of reclamation boosters in forcing land into use and of noting how tenaciously farmers cling to a homestead after it has become hopelessly unprofitable, I am inclined to seek a more realistic philosophy of land utilization.

I am particularly desirous of some more precise method than Ricardo furnished for determining what land is marginal and what is submarginal. One hears these terms on all sides in the discussion of the farm problem and various proposals for dealing with such lands; but when one tries to find land so poor that it may be called marginal one finds on it varying percentages of the farmers making good profits, and on land supposedly supermarginal varying proportions of the farmers losing money on their operations. These facts may probably be explained under the Ricardian theory as variations in efficiency of labor and capital, but this does not help much in determining what land we should regard as marginal or submarginal for purposes of land utilization policy.

It is, of course, not my purpose to criticize the Ricardian theory of rent. I therefore return to the conclusion that land economists should address themselves to the task of building up an inductive philosophy of the behavior of land under various conditions of valuation and utilization. If we are farther along in the development of scientific methods of valuing urban land, it is because the classical theories were earlier abandoned in this case and valuation was developed on the basis of a study of behavior. Nevertheless, in the case of urban land, as well as of rural, there is need for further research.

On the basis of the Ricardian theory there has been developed a program for reforming the rôle of land in the distribution and production of wealth. Briefly stated, it holds that the taxation of improvements tends to discourage the utilization of land, whereas the removal of taxes from improvements and from other tax-bearers and concentrating them on land would so stimulate the process of utilization of land and of production that poverty would soon disappear. Without undertaking to criticize the assumption that the proposed change in taxation would tend to stimulate the process of land utilization, I wish to maintain that a realistic approach to the problems of land utilization will indicate that such a process of stimulation is just the thing that should be avoided at all costs.

One of the central tasks of the land economist, then, is to acquire by research a fuller knowledge of the operation and effects of the forces which govern the expansion and contraction of land utilization in all of the several kinds of land, and on the basis of this fuller knowledge to seek to promote a more orderly and less wasteful process.

The achievement of a more orderly process of land utilization will probably necessitate not only a reformulation of economic doctrine as applied to land, but also a revision of political and legal conceptions. Our present ideas of landed property were largely forged under the fierce fires of the French and American Revolutions. Some of these conceptions stand opposed to that degree of social control which would tend to eliminate the waste in land utilization.

Modern capitalistic and competitive agriculture with its highly complex technical and mechanical requirements challenges us to develop some form of tenure and business organization which will provide the efficiency and continuity of the great corporation without sacrificing unduly the individual autonomy, economic independence, and family self-sufficiency characteristic of the older system. It may take the form of some system of estate management on the basis of holdings operated by carefully selected tenants, and with a type of landlordism especially adapted to the ends to be attained. It remains to be determined whether the landlord will be private individual, corporation, or state.

Students of land economics will not lose sight of the importance of achieving such objectives as a more efficient system of registering and insuring land titles, providing compensation for tenant improvements, and promoting a more scientific and efficient system of land valuation, which is basic to most other forms of progress in this field. I look forward to the day when we shall replace the present system of hit-or-miss valuation, carried on by a number of agencies more or less overlapping one another and duplicating their activities, by a centralized system of land appraisal operated by a personnel with well-standardized professional qualifications.

E. M. Fisher.—Probably first in point of urgency among the problems that press for solution stands the opportunity for the development of some measure of the need for new territory in the outlying districts of a modern city. No one knows what the ratio should be between population growth and areal growth of the city. It would seem to be a safe assumption that the chief need for urban lots arises from the number of people who inhabit the urban territory. Furthermore, it ought to be possible to give the subdivider some very valuable help with a normal ratio between the two. He should be able to approach the analysis of his market statistically, measuring more or less accurately the exact need for lots. Research ought to be able to throw light upon his problem.

Similarly, research ought to be able to determine with a fair degree of accuracy what proportion of the lots in a given urban area must be placed in use before the values and the characteristics of the given area are determined and stable.

Another problem to the solution of which research ought to be able to make a direct and valuable contribution is that of the scientific location of industry. Much has been done by geographers on the location of the natural resources of our country, but as yet little has been done to correlate this with the location of industry and to determine exactly what effect the location of raw materials has had on the location of industry and of cities. A

similar study will show how city growth is dependent upon industry and to what extent it is independent of it. Another of similar nature is the study of the forces governing the direction of growth of cities.

Still more fundamental to the science of land economics is the study of the distribution of the land resources of the urban area between the different uses and the changes in the distribution wrought by growth. This study must be made of a large number of communities with the data segregrated on a geographical basis so that the different relationships can be studied. Here uniform forces are doubtless asserting themselves whose discovery and enunciation will bring far-reaching assistance to city planners, real estate dealers, and investors in income-producing properties.

One of the most perplexing and significant problems confronting property owners and civic authorities is that of building height limitations. We may be safe in inferring that the economic limitation of building heights is the only one that will be permanently effective; but even if we accept that philosophy, we have little to guide us in judging what that economic limitation is. By studies similar to the one made recently by Dr. W. C. Clark, it would seem possible to arrive at a general conclusion as to the proportions which may exist between the size of the plot, the intensity of the use, and the other factors that enter into the problem.

Another study of equal importance is that of obsolescence in buildings, particularly in office structures. In a day of reinforced concrete buildings, the element of depreciation is practically insignificant except in connection with equipment, but obsolescence seems to be even swifter than before. The approach to this problem appears to be through a study of the replacement of buildings, or the differential in the rents which older buildings are able to command as compared with other structures newer but similarly located.

These are but a few of the immediate practical problems which press for examination. But few data are at present available with which to work. Beyond doubt there are scores of others which are equally important and just as urgent. But these may suffice to indicate the method of approach and some of the interesting opportunities that exist in the field. They may point to the contribution which may be made to public policy and to private guidance in the investment of funds in real estate.

G. S. Wehrwein.—I would like to emphasize several points suggested by previous speakers. One of these is research in land valuation. We have not yet worked out a method of valuation suitable to American conditions. In a nation where land values are, rightly or wrongly, expected to increase continuously, little attention has been given to value based on economic productivity. It has been said that land normally yields a low return. Part of this is the result of the overvaluation of land and the economist can do much to establish a rational basis for land values.

In land tenure more emphasis ought to be given to the place of credit as a means of climbing the "agricultural ladder." In a study made by the Institute for Research in Land Economics and Public Utilities of an area with practically no tenants, it was found that local credit was sufficient to take care of the transfer of property from one generation to another or

from one person to another. A static condition of the percentage of acreage mortgaged has been reached, very little change having taken place since 1880.

More study is also needed on the subject of inheritance in land tenure. We do not know to what extent this has been a factor in helping farmers to acquire the ownership of land. Another moot subject is the status of the "rented additional" farmer, i.e. the farmer who owns part of the land he operates and rents the rest. A study now being completed seems to indicate that these men use this practice as a step toward complete ownership. They are younger men than those who are full owner-operators and evidently are financially able to own only part of their farms. If further studies substantiate this we have discovered another rung of the "agricultural ladder."

Finally, urban land ownership and tenancy is still an unexplored field.

ARTHUR J. MERTZKE.—The fact that ten years ago none of the subjects embraced by the field of real estate were to be found in any college catalog in America shows that we stand here on the fresh soil of a new frontier. Today sixty-seven colleges and universities are offering courses in this field, and a growing number have not merely a well-rounded curriculum in the field, but offer the work as one of their major courses in both the graduate and undergraduate departments. At the meeting of the American Economic Association held a year ago in St. Louis a group of men interested in land economics and real estate met at luncheon for the purpose of discussing the nature and possibilities of this new field. At this meeting a committee was appointed to make a survey of the colleges and universities offering courses in real estate and land economics. This survey was made last April and brought up-to-date within the past few weeks.

SUMMARY OF COURSES IN REAL ESTATE AND LAND ECONOMICS OFFERED
IN
COLLEGES AND UNIVERSITIES IN THE UNITED STATES
DECEMBER, 1927

Course	Total	Day	Evening	Extension
All courses	190	116	54	20
Real Estate Practice	53	32	13	8
Land Economics	36	31	4	1
Real Estate Law	24	10	8	6
Real Estate Appraising	16	6	7	3
Real Estate Finance	11	8	3	..
Building Management	10	6	3	1
City Planning	10	7	3	..
Transfers and Conveyancing	7	3	4	..
Urban Land Economics	5	4	1	..
Building Design and Construction	4	2	2	..
Property Insurance	4	2	2	..
Building and Loan Associations	3	1	1	1
Taxation	3	2	1	..
Housing	2	2	..	..
Real Estate Accounting	2	..	2	..

From the analysis of the field at the present time it appears that the core of the field lies in the economics of land utilization, whether this be presented

under the title of "Land Economics," "Urban Land Economics," or "Real Estate Fundamentals" and that from this field of principles we find radiating a dozen or more specialized branches, the relative importance of which it is still difficult to evaluate. It is clear, however, that there is a rapidly growing appreciation on the part of both educational institutions and men of affairs of the vital importance of this field which deals with many of the most difficult and fundamental problems of our economic system. Accordingly, we have reason to expect the steady growth not only in numbers but also in quality as continuous research sheds more and more light upon problems which we are only beginning to appreciate.

MARKETING

C. E. Griffin, *Chairman*

The marketing round table session was devoted to a discussion of "Recent Trends in Distribution." The specific developments selected for consideration were "The Present Status of Wholesale Trade," "The Present Status and Future Prospects of Chains of Department Stores," and "Hand-to-Mouth Buying." Papers on those subjects were presented by Melvin T. Copeland, Edward A. Filene, and Fred E. Clark, respectively. The discussion was led by Theodore N. Beckman, Carl N. Schmalz, and Harry R. Tosdal. Abstracts of the papers are presented.

Melvin T. Copeland.—Nowhere in the United States is wholesale business being conducted by settled methods. This fact is indicated by a review of the conditions existing in various typical wholesale trades at the present time. A fundamental struggle as to how the wholesale function is to be performed is under way and many wholesalers still are dodging the real issue. The wholesale function must be performed, but the wholesale merchant is not in a position to dictate how it is to be performed. He is a middleman and must serve the interests of manufacturers and retailers.

A large part of the unsettlement in the wholesale trade can be ascribed to the radical changes which have taken place in the manufacturing and retail trades. One important development has been national advertising of trademarked goods by manufacturers. When a manufacturer places a trademark on his goods and advertises them to consumers, he is making his own business more stable and is placing the wholesaler, and perhaps the retailer, too, in a different position from that which those merchants previously have held.

In order to promote sales of their products, furthermore, numerous manufacturers have employed missionary salesmen and, in some cases, have undertaken to make drop shipments to retailers—all of which has affected the status of the wholesaler.

In the retail trade the growth of chain stores and the activities of retailers' co-operative buying associations and buying syndicates have influenced the wholesalers. The chief customers of the wholesalers dealing in consumers' goods are unit stores. These unit stores have been vulnerable to

chain store competition and that has made the wholesalers equally vulnerable.

Within the wholesale trades themselves, finally, certain practices have contributed to unsettlement; wholesalers' demands for wider gross margin; hand-to-mouth buying by wholesalers; inadequate methods of stock control and sales management; development of private brands by wholesalers.

It is hazardous to venture an opinion as to the means by which more settled conditions will be secured for the wholesale trade. A few definite premises, however, meet fairly general agreement. First, the trade-marking of merchandise by manufacturers and their advertising to consumers is likely to increase; second, manufacturers will give increasing attention to methods of obtaining orderly distribution; third, as the disadvantages of a varying price policy become more generally recognized, there will be less opportunity for wholesalers to trade on price. The wholesaler, to continue in operation, must become more a distributor and less a trader.

F. E. Clark.—Hand-to-mouth buying is a logical development of modern merchandising, but its development was hastened by certain post-war conditions. Among these conditions the most outstanding was the fear of falling prices which followed the orgy of buying that prevailed in 1919. The memory of 1920 and 1924 and the tendency toward gradually falling prices which succeeded those years caused a fear of speculative buying and introduced a spirit of extreme caution, with a tendency to buy in small lots at frequent intervals.

The fear of style changes has also been important. For, in addition to the continued progress of seasonal style changes, rapid industrial development and extreme competition have accelerated the introduction of basic style changes in machinery and equipment as well as in consumers' goods. Increased leisure and increased purchasing power have aided the introduction of styles, and as a result, buyers naturally buy carefully and in minimum quantities.

The growing recognition by business men of the importance of careful stock control has also been an important and permanent cause of the increase in hand-to-mouth buying. For although this began long before the War, the post-war conditions have taken this subject from the field of academic discussion and hastened the use of careful means of stock control as an accepted business policy.

Enormous and in many industries excessive plant capacity and improved transportation by rail and motor truck have been important in making hand-to-mouth buying possible. The former has assured adequate plant capacity and the latter has increased the speed of delivery, so that stocks can be kept low with greater assurance of "on time" deliveries than ever before.

Among the results of hand-to-mouth buying the more important have been a decline in speculative buying, the necessity of carrying large stocks with which to make rapid deliveries which has been forced upon jobbers and manufacturers and the resulting shift of much of the burden of financing

and of style forecasting from dealers to manufacturers. But perhaps the result of greatest interest is the effect on costs of production and distribution, with consequent effects in prices.

Here information is still lacking, and the ultimate effects will undoubtedly vary from industry to industry. It seems reasonable to assume that in many cases smaller lots have been run through the factory, and to the extent that these runs are smaller than the most economical runs which may be possible with larger orders, costs have risen. This has very likely been true of special order industries. In the case of standardized products, on the other hand, while individual orders may be small, total runs can be large and so economical.

Distribution costs are probably greater. Smaller orders mean greater transportation, selling, and clerical costs; in some cases, increased storage costs. But these are offset—to what extent we do not know—by the greater fluidity of stocks and fewer mark-downs.

If costs are higher as a result of hand-to-mouth buying, it is likely that there will be a return to larger orders, particularly in staple lines where style is unimportant and price is predominant. In style lines it is not so clear that this will result, for the higher costs may well be passed on to the consumer as a part of the price he pays for having style goods.

Finally, there seems to be general agreement that hand-to-mouth buying tends toward more stable business and to fewer peaks and depressions in the industrial field. Consumer purchases have proved to be remarkably stable from year to year, and since this new development brings manufacture and stocks into close accord, it leads to fewer excess stocks and so minimizes peaks and depressions.

Edward A. Filene.—Chains of department stores will, before very long, dominate the retail field. We are right now in the midst of epoch making changes in methods of distribution. Mass production has made mass distribution necessary. Although production costs are constantly decreasing, due to mass production methods, the spread between the production cost and what the consumer pays is on the average greater today than when I entered the retail business some forty years ago. Certain types of retailing are in effect dams in the stream of distribution—a stream which should be broad, deep, and swift flowing.

Chain stores have shown how to remove many of the obstructions in the distribution stream. It is true that as yet department stores have not been hard pressed. But unless they organize so as to conform to the new trend in distribution methods, chain stores will so organize that they will combine the advantage of the department stores with the manifest advantages which the chains already have. In one way or another great chains of department stores are certain to develop. One way is for the existing department stores to form themselves into chains. Each department of each store will then become a unit of a chain of similar departments. There will be chains within chains. If department stores fail to do this, then the existing chains in different lines will get together. They will occupy build-

ings of the department store type and organize to function successfully in competition with the most successful department stores.

According to figures gathered by the Chamber of Commerce of the United States, the sales of chain stores have doubled in the past eight years, while in the same time the sales of department stores have increased only 31 per cent. Such a difference is practical proof that chains are more nearly in accordance with fundamental economic law, and that they conform to the best current business trends.

The outstanding advantages which the department store has over the chain specialty store are: 1. Better local generalship with the consequent ability to get direct and swift action. 2. Many departments, including "service" departments, under the same roof. This makes shopping easier, more comfortable, and much more attractive. 3. Closer contact between the management and community served. The department store is a "good citizen," active in the community of which it is a part. 4. Departments which are unprofitable during certain seasons can be "carried" by the more profitable departments.

Among others, the chains have the following important advantages over department stores: 1. Greater purchasing power and, through centralized buying, a lower buying expense. 2. A greater degree of specialization. 3. Greater ability to work out best methods which are then standardized.

It sometimes comes as a surprise to learn that the purchasing power of even a large department store is exceeded by that of an average size chain, but it is true. That is one of the reasons for the great prosperity of the chains. No department store can buy in such quantities as the large chain. Macy's, one of the best stores in the world, cannot sell as many ten cent hammers as Woolworth; therefore Woolworth can buy that kind of hammer cheaper than Macy. No department store can sell as much canned goods as the Atlantic and Pacific Company, nor so much dress goods as the J. C. Penney chain.

The buying power of the department store is sufficient to enable it to deal directly with manufacturers, eliminating wholesalers and jobbers, thus saving the middlemen's profit and expense. But it cannot buy sufficiently large quantities to make the most efficient mass production possible. It used to be thought that large buying power was valuable solely as a club with which to hammer down prices—often to the point where the manufacturer lost money. Before the methods of mass production were understood that was usually the aim. But now mass production methods enable manufacturers to make larger profits, although selling at a low price, than they could make at a much higher price for a smaller order. The chain store's ability to place large orders for a single kind of goods enables the manufacturer to achieve great economies. He must, perforce, pass much of this saving on to the chain store, which in turn passes on all or most of the saving to the consumer. Inevitably this stimulates sales. It is that, largely, which accounts for the fact that the sales of the chains are growing far faster than the sales of individual department stores.

One of the first chains of department stores was the J. C. Penney Company which started twenty-five years ago with one store. From the beginning it grew steadily and rapidly. Since 1914 the number of stores has increased 1452 per cent and the average sales per store have increased 183 per cent. It now operates, according to the latest available statistics, 885 stores. During recent years several centrally owned groups of large department stores have been formed. There are, for instance, such groups as the following: R. H. Macy and Company, which has a large New York store, also owns or controls the stores of La Salle and Koch, Toledo, and Davison-Paxon-Stokes, Atlanta. The May Department Stores now number six. Gimbel Brothers have great department stores in New York, Philadelphia, and Milwaukee, and own or control the two large Saks stores in New York and Kaufmann and Baer, Pittsburgh. The Associated Dry Goods Corporation owns the following department stores: James McCreery Company, New York; Hahne and Company, Newark; Stewart and Company, Baltimore; Wm. Hengerer Company, Buffalo; Powers Mercantile Company, Minneapolis; J. N. Adams and Company, Buffalo; Stewart Dry Goods Company, Louisville; and controls under part ownership, C. C. G. Gunther's Sons and Lord and Taylor in New York. On the Pacific Coast, B. F. Schlesinger and Sons, Inc., owns department stores in San Francisco, Oakland, Portland, and Tacoma. In the Middle West, Scruggs-Vandervoort-Barney, of St. Louis, have acquired the S. L. White Company store in Columbus, Ohio, and the Denver Dry Goods Company in Denver. In the South, the City Stores Company has taken over three large well-known stores in Birmingham, New Orleans, and Memphis. There are other groups of department stores of more or less importance.

Some of these groups lack the fundamental characteristics which account for the great success of the ordinary chains. That is, the stores are not similar enough to give them the full advantage of large buying power. When one store of a group sells to the low priced trade and another is a high class specialty shop, it is usually no more possible for them to combine in a single order their requirements of, say, men's clothing, than it would be possible to combine the buying of jewelry and tinware. Even though a manufacturer makes both high grade and cheap clothing, the processes are so different that the two qualities cannot be put through the factory together. Mass production is therefore impossible. Chains of large department stores such as I foresee will not have the fault of dissimiliarity. The stores will be very similar. These chains will combine the advantages of department stores and of the existing chain stores; and properly organized, they will be able to eliminate most of the weaknesses of both types.

The future chains of department stores will have six outstanding characteristics as to organization; namely: 1. They will cater to customers of all degrees of buying power and all tastes. 2. They will concentrate on three full line price levels. 3. Departments will be highly specialized. 4. Buying will to a large degree be centralized. 5. A delicate balance between centralization and decentralization will be maintained. 6. Policies will be based on facts—not on opinions.

Let me discuss these characteristics of the department store chains in order. First: They will appeal to all classes of customers. They will not be "exclusive," nor "cheap," nor "middle class." They will sell high priced, low priced, and medium priced goods, just as the General Motors Corporation does. That highly successful organization caters to the great market for low priced cars with the Chevrolet. The wishes of the man who wants a fine car at a high price are met with the Cadillac. The man of ordinary means who wants something better than the Chevrolet, but who does not want to spend as much as the Cadillac costs, can buy a Buick, or one of the other General Motors cars that come in the middle price range. But the bulk of General Motors automobile sales are in the three price levels represented by Cadillac, Buick, and Chevrolet. So will the chain department stores cover the needs of all consumers.

Second: The chain department stores will concentrate on three full line price ranges. I have described the philosophy of this method in detail in my book, *More Profits from Merchandising*. It is not necessary to go into it minutely in this paper. Briefly, the point is this: In order to keep the costs of retail distribution as low as possible it is necessary to get the largest possible volume of sales with the smallest possible stock of goods. That gives a rapid turnover which not only cuts the cost of selling, but enables the retailer to make a satisfactory total profit on a smaller margin. If full lines of goods are carried in all of the possible price ranges the stock becomes so large that the turnover is greatly reduced. What might possibly be gained in volume is more than lost through slower turnover and ultimate mark-downs on slow moving and obsolete goods. Experience has shown that even when a store appeals to all classes of consumers, from rich to poor, 85 per cent of the sales in each class of goods are in three price ranges, which can be described as the "highest price full line," the "best selling full line," and the "cheapest price full line." It pays a store to stock full lines of goods in these three price levels. These cover all of the goods which are salable in mass and make it possible successfully to sell the highest quality of goods which must be priced above the highest full line level. Above the highest priced full line, below the lowest priced full line, and in between them and the best selling full line the demand is rarely sufficient to warrant carrying full lines, although it may pay to carry a fair assortment. By standardizing on the three full line price levels and insisting that the manufacturers sell at a price which will fit the goods into one of them, the stocks which must be carried are greatly reduced and far fewer mark-downs are necessitated by the unsalability of goods marked at the odd price. As a fundamental policy for the chain of large department stores it is absolutely essential.

Third: Departments will be highly specialized. There will be many more divisions of departments in these chain department stores than are common now. Department stores have found it pays to split up existing departments into two or more, and keep them separate not only as a matter of management and bookkeeping, but physically. Thus in Wm. Filene's Sons Company we have split the women's dress department into many de-

partments based on price ranges and classifications. I think it safe to say that no store that has split its departments up for the sake of getting a high degree of specialization has ever regretted the step or gone back to the old plan. This specialization will be especially valuable to chains of department stores by increasing the effectiveness of centralized group buying. The closer the specialization the more possible it is to place orders that the manufacturer can produce by mass methods.

Fourth: Centralized buying. I have stressed how department store chains will increase the effectiveness of their buying power, by concentration on the three full line price ranges and by making possible mass production of the goods they buy, thus reducing the price they will have to pay for them. Lower prices from the manufacturer are an important, but by no means the only benefit that results from centralized buying. It will be possible to reduce the expense of the buying offices and at the same time to employ more skilled buyers. To indicate the possibilities of volume buying under centralized control where each department of a store is a unit of a chain, consider these figures: The Woolworth Company selling roughly $250,000,000 worth of merchandise in about 1,500 stores does all of its buying through a staff of 36 buyers. If each of the stores did its own buying, a chain like Woolworth's would probably need at least 5,000 buyers. Department store chains will be able to employ the highest priced experts—men at least as skilled as those employed by existing chains. At present a department store can afford, on the average, to pay from about $5,000 to say $20,000 a year to its various buyers. Higher than that they cannot often go. The best men therefore enter business for themselves in the hope of making what they feel they are worth. The man who buys for the fifty or more units in the chains of departments that will make up a department store chain can well be paid $50,000 a year. Each store, at a yearly cost of $1,000, will be getting at least five times as great skill as it could get were it to pay its own buyer $10,000 a year. But the present buyers will become more valuable and earn more than they do now, as they learn that they should be primarily sellers rather than buyers. They will be highly skilled in finding out what customers want and ought to have. They will make it part of the job to see that the central buying department secures those things for them. The ordinary buyer of average skill is too inclined to buy what he likes and then leave it to the advertising department and the sales people to sell the customers what he has bought.

Fifth: Balance between centralization and decentralization. The department store chain will combine the merits of centralized control which underlies the chain idea, and the decentralization of the department store. This balance cannot be determined academically or theoretically, but only from the bedrock experience which comes from a lifetime spent in the practice and study of retailing. In the main there will be centralized administration, management, financing, control, and buying, combined with, or tempered by, decentralized operation and selling. In each centralized function, there will be an admixture of decentralization, and vice versa.

Sixth: Policies and methods will be based on facts—not on opinions.

Research work of many kinds will be carried on for the chain by centralized research departments. Methods of accounting, of selling, of advertising, of doing all the things a store must do, will be studied, the best methods standardized, and the individual store shown how to adopt them and use them. Sources of supply will be investigated and when necessary they will be shown how to get the best results out of mass buying that the chain's large orders make possible. Ford has often done this for his sources of supply. Testing laboratories will probably be maintained to determine the quality of the goods which the chain buys and to find out how they can be improved.

These many advantages that I have touched on make it certain in my opinion that in the near future we shall see chains of department stores which even in these days of Gargantuan businesses can be called "gigantic." It is not a wild guess to forecast that in the near future there will be organized a chain of 50 or maybe 100 department stores in as many cities. It would not be difficult to pick out 50 such stores which are now doing an average business of $20,000,000 a year each. I have said that Macy's does a business of $83,000,000 a year. Filene's, which is not a department store, but a specialty shop, with only about 10 per cent as many different classes of goods as Macy's, and located in Boston, with only 700,000 population, has sales of more than $29,000,000 a year. Such a chain would have total sales of one billion dollars or more a year. That volume of sales would be comparable to that of the General Motors Corporation with sales of $1,058,153,338 or perhaps even to that of the United States Steel Corporation whose sales in 1926 were $1,508,076,090. A single one of the chains of departments in such a group might sell $50,000,000 worth of goods a year, or more. Some of the chains of departments will take the entire production of the most scientifically organized factories. Others will take enough of a factory's production to stabilize its business and make the tremendous economies of real mass production possible. The manufacturing costs of the goods will be reduced considerably. The distribution costs will be cut 25 per cent or perhaps 50 per cent. The lion's share of these savings will go to the consumer in lowered prices, yet the total profit on sales will be higher than any department store or chain of stores now enjoys.

Chains of department stores such as I have outlined will develop in the near future. The obvious and logical way for them to develop is for existing independent department stores to get together. If they hesitate too long, the chain will develop in another way. The existing national chains will get together, add such other chains of departments as they need, occupy department store buildings, and make serious, if not fatal, competition for the existing department stores.

Theodore N. Beckman.—I thoroughly agree with Professor Copeland that "there is probably no subject to which manufacturers are giving more serious thought at the present time than that of the wholesale distribution of their products," and that "in nearly every line of industry some of the major problems to which especial attention is being given by business men

at the present time are the problems of wholesale distribution." I cannot share, however, to the fullest extent in the pessimistic view concerning the unsettled condition of the wholesale trade in the United States. I wonder whether the whole field of marketing may not be characterized in the same way. For example, can it be said that retailing is less unsettled than wholesaling? Just observe and catalog the numerous changes that have taken place in retail distribution within the past fifteen years and I am sure that you will be convinced that it is also quite a dynamic field. In fact, hardly any phase of marketing may be regarded as entirely static.

To be sure, many manufacturers on the one hand and retailers on the other have attempted to go around the wholesaler, just as some manufacturers have attempted to sell direct to the consumer, but have they always succeeded in their endeavor? We point, for instance, to such organizations as Proctor and Gamble in the grocery trade and the Winchester-Simmons Company in the hardware business as proof for the general tendency toward the elimination of the wholesaler, for both of these concerns have broken away from the older and more orthodox channel of distribution. But an examination of the results obtained, as measured by sales volume and net earnings, fails to prove the contention that direct selling is more profitable. On the contrary, such figures show that both attempts have apparently been failures.

Figures from published sources [presented at the meeting by Mr. Beckman] show that the Proctor and Gamble Company's sales and net earnings have decreased considerably since 1919 when their change in policy involving direct sale to retailers was put into effect. While some of the losses sustained in 1921 and the reduced volume of business during the years immediately following the change in distribution policy may be attributed to the business depression of 1920 and 1921, and to certain other factors, much of the change in their condition may justly be laid at the door of the new plan of distribution. Otherwise, how can one explain the continued decrease in sales in 1922 and only the slight increases in the two years following? Furthermore, despite the increased volume of business since 1923 the margin of profit has been constantly declining. Our conviction on this score seems to be strengthened by the fact that in introducing a new soap the company sought to distribute it through wholesale druggists rather than by means of direct sale to retail dealers.

Even more unsatisfactory results are indicated by the figures showing the condition of the Winchester Company before and after its merger with the Associated Simmons Hardware Companies on August 27, 1922.

Again, an examination of failure statistics reveals the fact that while wholesalers are not immune to bankruptcy or other types of insolvency, their span of life is more than twice that of retailers. I therefore wonder whether Claflins' failure in the dry good trade was not merely a failure of *a* wholesaler rather than a failure of *the* wholesaler? I believe that this organization has struggled for many years on the verge of failure and that it merely reached its culmination at a recent date.

In the shoe trade we still find a substantial percentage of the total pro-

duction distributed through wholesalers even though the position of the wholesaler in that line of business has not been strengthened within the past ten years. According to the Federal Trade Commission,[2] no less than 47 per cent of the shoes were distributed through wholesalers in 1919.

There is no doubt that manufacturers will attempt in larger numbers to go around the wholesaler and even sell direct to consumers, just as they will experiment with many other distribution methods and policies.

Retailers will also try to go around the wholesaler, for to many of them there is magic in the words "direct from the manufacturer." Whether or not their new venture will prove profitable depends much upon other factors, such as the line of business, and size of purchases.

I believe that the keynote of the whole problem was sounded by Professor Copeland when he stated that "whether the wholesale function continues to be carried on extensively by independent wholesalers . . . . depends upon how economically and how effectively the wholesaler can function as a distributor, and also upon how economically and how effectively the unit stores function in the trades in which they predominate," although I would not place quite as much stress upon the latter. Personally, I can see a renaissance in that field of merchandising and am sure that much can be accomplished in raising its level of efficiency if we would only point the way.

Harry R. Tosdal.—Professor Clark is to be congratulated on the completeness of his paper. While in many respects his conclusions are extremely indefinite, I am inclined to agree with the general attitude that no final conclusions are possible on the basis of the limited data and limited experience which we have had with hand-to-mouth buying. Professor Clark has touched the salient points, and my disagreement with him is one which deals mainly with emphasis rather than the factors involved.

I am inclined to emphasize the uncertainty of price levels since 1920 and 1921, which, coupled with the narrowing of margins causes buyers to be more cautious.

I should disagree with Professor Clark's implication that consumers are stampeded. The most alert merchandisers of style products attempt to keep in close touch with consumer demand. We see the popularity of a limited number of styles, but we do not see the thousands of styles proposed by manufacturers and killed by consumer indifference.

As to the major conditions making hand-to-mouth buying possible, it is not only the increase in production facilities, but also the increase in their effectiveness which appears as increased productivity of labor. The increased speed and certainty of transportation necessitates a much smaller allowance for stocks in transit.

To the reasons which Professor Clark has advanced for the decline in speculative buying might be added a fourth; namely, that in certain lines the future buying of commodities had begun to take place, due to the discovery by retailers and wholesalers that over a period of years there

[2] *Report of the Federal Trade Commission on Shoe and Leather Costs and Prices*, June 10, 1921, p. 27.

was little real advantage to be gained therefrom. As to the carrying of larger stocks in total, there seems to be a good deal of doubt.

A last point which I should like to single out for emphasis is barely mentioned when Professor Clark says, "It is even possible that through removing former peaks and depressions production can be carried on more uniformly and more economically than before." Even more important is the possibility that hand-to-mouth buying may steady the flow of production in industries in which there have been numerous peaks and valleys due to the buying habits of wholesalers. Products used regularly by ultimate consumers should flow regularly from the manufacturer. Where wholesalers' speculative buying intervenes unnecessary peaks and valleys result. The decline of this speculative buying may bring with it the social advantage of stability of employment, an advantage so great that even though there is no saving in cost but even a slightly higher price, hand-to-mouth buying might justify itself.

Carl N. Schmalz.—In thinking about chain department stores we should keep two facts firmly in mind: First, the use of the word chain implies an organization of stores which is owned as a unit and which is achieving the various advantages of unified ownership and of unified management. If the word chain be used in this sense, the number of department store chains in the United States at present is surprisingly small. There are quite a few department store organizations which have unified ownership, but, for the most part, these seem to have gone but a small way toward achieving the advantages of group management. Second, we must remember that unified ownership is not at all necessary for achieving many of the advantages of group management. It is probable, for instance, that none of the department store organizations with unified ownership have gone anything like as far in this direction as has the leading association of independently-owned stores. At present there is ample evidence to support the statements that independent stores will continue to form groups for the exchanging of information, both statistical and non-statistical, for the setting of performance standards, and for buying. Not many persons will be inclined to question the practicability of groups organized for the exchanging of information. There are, however, a number of people who hold that group buying cannot proceed far.

The people who argue that department stores never will be organized into chains usually base their conclusions upon the fact that the merchandise handled in department stores can never be completely standardized. It seems to me that, although their premise is quite sound, their conclusion does not necessarily follow. If a department store chain can buy only 15 or 20 per cent of its merchandise in a group way, the economies effected in that group buying, when added to the financial and other economies of unified ownership and unified management, probably will be sufficient to give marked advantages over competing independent stores. No one knows how far chain department stores may be able to go in the standardization of merchandise and in group buying, because no group buying organization is at

present any where near the limit. An executive of one of the stores doing an outstanding job in group buying stated to me recently that something like one-eighth of its purchases are made in a group way. The same man estimated that this fraction could be doubled if proper co-operation were secured.

It is true that independently owned stores may be able to organize themselves into groups which will achieve many of the advantages of unified ownership. A chain of department stores properly organized, however, can achieve all of the advantages of associated independent stores, plus certain financial economies, and the ability to force participation in group activities.

The advantages of chain ownership and management will result in: 1. A lower total of operating expenses, plus merchandise cost; that is, an increase in distribution efficiency. 2. Lower prices and increased values to consumers. 3. Larger profits for the stores. 4. Smoother operation of the stores. 5. More satisfactory service to customers.

From observation of current trends in the department store field, I think, that we may safely predict four developments: 1. The tendency for independent stores to combine in groups for research, buying, and other activities will continue. 2. There will come the development, probably at increasing speed, of chain department stores; that is, groups of department stores owned and managed as a unit. This will come about because the chain organizations will have all of the advantages of the independent stores which are associated in groups and, in addition, will have certain advantages which the independent stores will find it very difficult, if not impossible, to achieve. 3. There will be an increasing tendency to standardize merchandise and to establish better merchandise specifications. 4. In spite of these developments, the chains probably will not gain sufficient power to force out of business the independent stores which have enlightened managements.

THE PRESENT STATUS AND FUTURE PROSPECTS OF QUANTITATIVE ECONOMICS

Frederick C. Mills, *Chairman*

Quantitative economics is not new with the present generation. The novel factor, if there be one, is found in the degree of emphasis placed upon the use of quantitative methods today. This emphasis has drawn attention to a number of problems, some new, some old.

That economic theory must accord with the facts of economic life is, of course, axiomatic. Economics is not one of those disciplines the end of which is the construction of a logical system having no necessary relation to the world of things and events. The problems which concern us at present relate to the technique by which economic facts are described, co-ordinated and explained in terms of theory, and by which theory is verified and extended.

One problem which has bulked large in recent discussion concerns the relation between quantitative and qualitative methods. In the description and explanation of economic phenomena, is quantitative method essentially

the handmaiden of qualitative economics? Or does quantitative procedure generate new economic problems and direct research into new channels? Will quantitative method develop a theory after its own likeness? There remain differences of opinion on these points, but in concrete applications these are essentially differences in emphasis.

Other problems, which are perhaps of more immediate importance, center about the relation between quantitative technique and the phenomena of economics. To debate on theoretical grounds the respective merits of quantitative and qualitative methods, or to consider the abstract merits of any technique, is not, I think, very profitable. The physicist does not inquire: Is the Euclidean geometry true, or valid? He asks: Does the Euclidean geometry fit these phenomena? Are its assumptions in agreement with the facts in this field? Is it valid as applied to these data? A system may be consistent and logical, yet it may not accord with reality in a given field. Here, I take it, is one of the fundamental problems which confronts one who employs quantitative methods in economic research. Is his technique valid as applied to the data of economics? Are his methods adapted to the study of economic phenomena? Are the assumptions implicit in his procedure realized in the field of economics?

Here we face a new difficulty. It may be that we cannot answer "Yes" or "No" to the question: "Are the assumptions implicit in statistical procedure realized in the field of economics?" The data of economics are varied and heterogeneous. Economics was a trim, compact body of doctrine as it came from the hands of the classical economists. It has become a sprawling, ill-defined science, and the phenomena with which it deals cannot be classified under one or two simple heads. I think that the solution of these problems of methodology will be facilitated if we recognize that there are several levels of economic phenomena, and that they yield data amenable to different kinds of treatment.

But these are not necessarily the problems which will be discussed today. The scope of the subject is broad, and each of the speakers has been asked to discuss such aspects of the general topic as seem to him to be important. Different viewpoints are represented. The exchange of ideas should illuminate many of the problems which have perplexed us.

Jacob H. Hollander.—The history of economic science, as indeed of every science, shows a recurrent interest in methodology. In the history of thought, a period of productivity ordinarily declines into exposition and commendation. Restlessness develops and sterility is assigned to the mode of inquiry rather than to the limitations of the inquirer. In opposition, a new procedure is exalted and obloquy cast upon the old method, instead of progress being credited to the talents of the new investigator.

In its largest sense, scientific method is the orderly manner in which the human mind seeks to assemble a related group of positive phenomena and to interpret uniformities and sequences. To the task are brought our rational faculties, differing in exercise from time to time and from place to place, but essentially identical as to stuff. There is thus no question of this method

as against that, but of method in entirety. The scientist works as an artisan, equipped with a kit of tools, and using this or that according to the nature of his task and the quality of his skill.

The norm is the collection and assembly of positive phenomena in supplement of the facts of familiar experience. Scrutiny, vivified by imagination, begets a trial hypothesis. Thereafter by rational process come theories. The final, and in our science the much-neglected stage, is test by experiment, or more readily, verification by reference.

Obviously, in all of this, statistical activity plays a large, and is likely to play a larger, part both in the assembly of material as the starting point for inference and as the proving ground for verification. With fuller equipment it will comprise qualitative description, in co-ordinate importance with quantitative aggregates. The prospect is thus not of a new mode of inquiry in economic science, but of a truer practice of the old.

Jacob Viner.—Economists have not ordinarily appeared at their best when engaging in methodological discussion. Writers who in the ordinary course of events were mild, tolerant, catholic in their own practice, in a word "sensible," were in their methodological preaching exceedingly prone to be dogmatic, bigoted, exclusivist. If they were defenders of old techniques, they saw insuperable difficulties blocking the path to the successful employment of the new, and proved their point by challenging the new techniques to perform impossible tasks. If they were exponents of new techniques, their brief for the new often reduced itself, under careful scrutiny, to unsupported ex cathedra pronouncements to the effect that their particular technique was the only sound one; that the old techniques were obsolete; and that in the calculable future the new techniques would completely win the day.

As I read it, the history of method in economics shows that power of economic analysis and equipment of analytical tools grow only by painfully slow accretions of knowledge and technique; that never has there been a time in which a generation has made such vast strides that it could afford to discard or even to neglect the achievements of the preceding generations; that economics has never been demonstrably aided by methodological discussion, except when it was a phase of actual experimentation with method in connection with some actual and specific problem; that methodological enthusiasms, by distorting and throwing out of balance the curriculum of training for young economists, and by diverting the energies of able men from actual productive work to the drawing up of magnificent programs and manifestos have done much harm to economics by promoting methodological fanaticism, that sanguine prophesying as to the sole method which will prevail in the incalculable future has always failed to bring enduring comfort to the prophet or even to the most devoutly credulous of his disciples. To the extensive discussion of method in economic theory conducted in recent years by American exponents of new methods, including the quantitative method, much of the preceding criticism seems to me to be applicable in a peculiarly high degree.

It seems to be true, as we are told so often by the exponents of the quantitative method in economics, and as we could not have well avoided knowing even if they had not spoken on the subject, that in the physical sciences progress has consisted in the discovery of quantitative differences underlying what first appeared to be solely differences in kind, in the development of techniques for the more or less accurate measurement of variations in these quantities, and in the discovery of mutual dependencies between different sets of these variations. But the varied character of its subject matter and the wide range of diverse problems with which it deals makes of economics an ill-ordered and sprawling discipline, concerning itself in one direction with metaphysical, ethical, and introspective psychological issues, in another direction with mass behavior in relation to price phenomena, and in still other directions with problems of agricultural chemistry, of industrial technology, and of the art of getting rich quick. Under the circumstances methodological analogies from physics should not be applied to economics as a whole without the most serious qualifications and reservations. In one direction at least the path of progress in economics will approximate the direction which the physical sciences have taken. No one, I believe, would question this. But there will always be, at least in the calculable future, a metaphysical penumbra to the most concrete of economic problems which will resist tenaciously exploration by the methods of the physical scientist. And for some time into the future there will be problems of interest to the economist which will be elusive of the application of the techniques of precise measurement and which will have to be dealt with by methods of inquiry which in the dogmatics of the laboratory scientist have lost their respectability. It is true, however, even of the physical sciences, or at least so I gather from the recent writings of the more articulate physicists, that they are losing some of their late Nineteenth Century preference for naïve as against sophisticated metaphysics, and also that until they have devised quantitative methods of dealing with problems they proceed brazenly by means of inferior methods without much apparent injury to their self-esteem.

If the term "quantitative" be used, as it has often been used by economists, in its common sense or non-technical meaning as applying to analysis in terms of incipient measurement, in terms of "more or less" relationships, as well as to analysis in terms of arithmetically measured factors, most of the old deductive economics was, of course, quantitative. But it is the statisticians who have been the fanatic advocates of exclusively quantitative economics, and though they are rarely explicit, it would seem likely that they wish to employ the term in its strict technical sense of precisely measured quantities.

In this sense the traditional economics was rarely, if ever, quantitative. Its propositions were stated in terms of more or less, of increase or decrease, and not in terms of how much more or how much less. The adequately cautious neoclassical economist never laid claim to the possession of sufficient information about his curves to enable him to fit equations to them. The systematic development of supplies of factual information will undoubtedly

promote the application of quantitative methods in economic analysis. In the absence of the possibility of crucial experiments except perhaps at the periphery of economics where it makes contact with agricultural chemistry, with technology, or with individual psychology, the quantitative method will undoubtedly be statistical in form, and if quantitative analysis ever produces any quantitative economic laws they will most typically be laws in statistical form summarizing the observed mass behavior of mankind in the world of price phenomena. This sounds like an important concession to the possibilities of quantitative analysis in economics, and it is so intended. But I would also make important reservations. I have already hazarded to predict that for many years at least there would be much within the traditional range of economic inquiry which will wholly resist quantitative inquiry, and that it will also be many years before economists discover how to apply quantitative analysis to a wide range of problems which do not seem by their inherent nature to be ill adapted to such analysis. Moreover, in the absence of the capacity for actual isolation of those factors whose modes of operation are the particular objects of inquiry, this technique of statistical analysis will always have to lean heavily on the theory of probabilities. It will never produce in fact, though it may in appearance and in the belief of its practitioners, precise categorical solutions. Economic phenomena are always the product of a host of factors and should therefore apparently provide a fertile field for the application of probability theory. But though many forces combine to produce an economic phenomenon, frequently, if not generally, a comparatively few factors are dominant in the situation, and these change so rapidly and as yet so unpredictably in their intensity and their relative importance that the deductive application to a given situation of knowledge as to the usual operation of a few of these dominant forces will often render more service than the most subtle elaboration of probability theory if unguided by the possession of such knowledge.

Some exponents of what they call quantitative economics appear to identify the accumulation of statistics with quantitative analysis, and to assume that such things as the measurement of the national income, and of its distribution by class or by geographical area, or the compilation of index numbers of prices or of trade are the stuff of which the quantitative economics of the near future is mainly to consist. There is an important distinction between statistical enumeration, classification, compilation, on the one hand, and economic analysis on the other. Economic theory and political arithmetic are not the same thing any more than barometric readings and meteorology are the same thing. As a layman I venture to suggest that a good grasp of economic theory would make of the political arthmetician a better craftsman, and I feel certain that economic data in statistical form will prove invaluable to the economic theorist of the near future. But that there should be a close alliance between the two is not sufficient reason for identifying the two or for absorbing the one in the other. The search for mutual dependencies, for covariations, in economic phenomena, is the sole task of economic theory, and index numbers, estimates of national income, and so forth, no matter how much genius and theory may have gone into their

attainment, once achieved are by themselves merely edifying facts and serve no imaginable purpose except as the theorist uses them as means to the discovery of relationships between things or the statesman or business administrator finds therein evidence of things that require to be done if he is to attain his ends.

There is a type of what is properly enough quantitative analysis which in economics I feel convinced is not likely to be productive of acceptable results; namely, the merely mechanical search for mutual dependencies among data selected almost at random. Several years ago there was a sudden wave of enthusiasm among American pedagogues for the Pearsonian coefficient of correlation, and a plague of graduate students in education spread itself over the land and began correlating furiously and indiscriminately and with an inverse correlation between zeal and discretion which seems closely to have approached, if not quite to have attained, perfection. As might have been anticipated in a world full of nonsense correlations, the results were grotesque and brought about a quick reaction. There are ominous signs, however, that economics is becoming similarly infected. I am completely skeptical as to the value of any purely empirical results of statistical analysis in economics, especially when by the mechanical application of statistical devices laws of striking simplicity and of fundamental importance are discovered to be ruling the economic universe. Where the mind unaided by statistical analysis sees complexity everywhere, and statistical analysis unaided by the mind finds beautiful simplicity, I am reactionary enough to place my faith in the intelligence of my predecessors. I do not believe that there are many economic time series which forecast their own future trend with sufficient accuracy to be much superior to the random guess as to future trends. That there is a law of the growth of population, which can be expressed in a simple algebraic equation; that there is a law of the growth of capital; namely, that it grows at the rate of 3 per cent a year; that normal price bears such a relationship to cost of production that on the average price will equal or exceed the cost of production of 88.7 per cent of the output and will yield 12 per cent per annum net revenue to the capital invested; that the business cycle has a normal duration of thirty-seven months; that there is a fixed law governing the distribution of income which can be stated in arithmetical terms or shown graphically; such propositions, except as they are presented merely as approximately accurate statements of what has on the average occurred in the particular instances surveyed, seem to me to be purely fantastic. Even upon the assumption that with the improvement in its technique and the accumulation of data economics can attain the same degree of exactitude as the physical sciences, I can see no reason why we should anticipate even the future attainment of laws of this type, for I see little resemblance between such "laws" as the above, which deal with the joint unanalyzed products of a complexity of unanalyzed forces, and the laws of the physical sciences which rest on carefully dissected and abstracted factors in controlled situations and leave nothing in the situation unaccounted for unless the residual unanalyzed elements appear to be relatively insignificant in their importance. In so far as sta-

tistical analysis can bring us nearer to the physical sciences in our approach to precision and measurement, it will not be through such modes of analysis as have produced the aforementioned "laws," but through an approximation, by means of statistical abstraction of factors, to the actual abstraction which the physical scientist performs in his laboratory or in his range of data sometimes finds adequately existent in the world of crude uncontrolled data. It seems to me that even at its best quantitative analysis in economics will produce quantitative results only as history, not as a basis for quantitative prediction; and whether as history or as basis for prediction there will be no specific importance to the precise degree of relationships discovered by such analysis, a correlation for instance of 0.6 and 0.9 for most purposes serving equally well as guidance to future action and as an aid to the understanding of past events. I even find some difficulty in thinking of economic problems in which qualitative results, assuming their adequate plausibility, would not serve any conceivable purpose of understanding and action as well as precise quantitative results. Statisticians have given us as illustrations of the importance of quantitative results in economics problems of technology, of engineering, in which value considerations were not dealt with, or else problems of war administration where economic considerations were regarded as negligible.

It is not at all my intention, however, to depreciate the real potentialities of quantitative methods in economics. What concerns me is lest in their enthusiasm for new methods the statisticians do not unduly minimize the value of old methods, and do not hamper themselves in their own work by placing excessive reliance upon the capacities of too restricted a set of tools. There is no longer any need, in American economic circles at least, of preaching the quantitative faith. There is need of urging upon its devotees a more tolerant attitude toward the merits and possibilities of the older methods.

Rhetorically, at least, statisticians have been relegating to the junk pile not only the old methods, but also the old problems which had been attacked by those methods. We have been told that the economist of the early future will not be interested in the questions for which the older economists sought answers, but will concern himself with new problems and with only such problems as can be investigated by the new quantitative techniques. We have also been told that for some time into the future the new economists, who will of course be quantitative economists, will be content to make detailed investigations narrowly confined in their range and to build up a mass of information as to the empirically-discovered relationships within narrow ranges of concrete phenomena. These are almost precisely identical, in their relation to what has gone before in economic inquiry, to the prophecies of the German historical school some sixty years ago, and it is this resemblance alone which causes me concern. To a very substantial degree the German prophecies were fulfilled in so far as German economics was concerned, and German economics is now obviously struggling to repair the resultant damage, and by regaining command of the technique of analysis, whether in its predominantly neoclassical, its mathematical, or its quan-

titative variants, to regain the exalted position which it occupied before the historical school won its costly and temporary victory. Without some capacity to fit isolated phenomena into some general system, there can be no sense of proportion, no guide as to the significance and the proper interpretation of the empirically-discovered relationships between small groups of detailed phenomena, no working dominance over the wilderness of single instances which the economic world must seem to be to the economist who does not believe in general theory, no effective machinery for the creation of new hypotheses which, I would think, even the most empirically-minded of statisticians would find essential as a stimulus to really creative quantitative work. Nor can I see any more wisdom in the relegation of the old problems to the antiquarian. As time passes, changing interests and circumstances do render some older problems obsolescent and do bring forward novel problems. But I see no evidence of any revolutionary change in this connection, and I do see much evidence, for example, that in the English literature of the first two decades of the Nineteenth Century many economists are wisely seeking for light on the post-war problems of the present time. One list of the "new" problems which I have seen happens to include just that range of problems with which the older economics especially concerned itself.

To me the most hopeful prospect in American economics is the extent to which economists possessed of both the capacity and sympathy for theoretical analysis of the old-fashioned kind, on the one hand, and of a good command of the tools of statistical analysis on the other, are applying both techniques in happy harmony to the investigation of important phases of the economic process. So far, I am afraid, they have raised more questions than they have answered, but this, I suppose, is what is to be expected at this stage of their work, and in economic theory the asking of important questions is itself an important contribution. In so far as the old theory is concerned, the new quantitative work has suggested refinements and corrections, but its contribution has so far been most modest in its proportions, and I have not encountered any products of statistical inquiry which need make any eighty-year-old economist who was really a good economist of the old type feel that he has wasted his life. It is not in the slightest my object to dissuade any economist from pursuing quantitative methods, and I am fully convinced that the time is very soon coming, if it has not already arrived, when those of us who have not got a fairly good command of statistical methods will not feel respectable.

In the calculable future the day may arrive when theoretical inquiry of the old non-statistical form, with its inferences from unsystematic and inexpert observation, and its deductions from old and inadequately verified generalizations, will be in the main an instrument for the construction of hypotheses, and statistical analysis will be relied upon to give them the stamp of credibility. But it will not be the political arithmeticians, or the empirical statisticians who seem to think that the economic problems of the future will be solved out of a handbook of empirical formulæ, who will render this service.

I do not think that the old economics was excessively general in its pursuit of wide generalizations, and I believe that even when all economists have also become statisticians those of them who are philosophically minded will still endeavor to build up all-embracing systems. Even today American statisticians are in fact finding the neoclassical economics not general enough, and are accepting the criticism of the Lausanne school that it deals simultaneously with the variations in too few factors to give an adequate bird's-eye picture of the general system of economic interrelationships as a whole. The wider and more comprehensive generalizations of the continental mathematical school, on the other hand, make necessary such extreme abstraction that they have admittedly not been capable of application to concrete phenomena or of verification by observation even to the degree to which the neoclassical economics has already realized these possibilities. The great achievement of the future in general economic theory, and one which American statistical economists who are also masters of the old techniques seem to me most likely to attain, will be by lessening the generality of the mathematical economics and widening that of the neoclassical economics to bring these into a harmony of such a character as to make the new product susceptible in some degree of statistical verification and of concrete applications. It is an achievement which without statistical analysis could not be made, but which without the old non-statistical techniques and accomplishments could not even be dreamed of.

E. B. Wilson.—The reason I am in this symposium lies not in any small knowledge of economics that I may possess but in the desire of those who organized the program to have some discussion of what may be accomplished by applied mathematics presented by one who had some experience in applying it to various though other fields of science.

Mathematics may be applied in two ways—rational or analytical, and descriptive or empirical. The latter is essentially statistical; it seizes upon any items or variables each of which has been or can be measured or counted or classified into series or sequences and attempts to determine relations between those variables, with the result that some statements with respect to the cogrediency or contragrediency of pairs or even of groups of these items are made. The analytical method tries to get back to the meanings of the variables, to determine those which by their meanings should be related in that intrinsic intimacy often described as cause and effect, and to determine the relations in ideally simple cases freed from complications due to other variables deemed to be relatively unimportant. It goes without saying that both methods may be essentially helpful and that both are employed together albeit with differing emphasis according to the nature of the phenomenon or the individual proclivities of the investigator.

The aim of the empirical method is to enable us to recognize a situation in such a manner that we may distinguish between different situations. This is basic to knowledge; we cannot analyze and reason until we have some more or less definite information and some fairly well discriminated notions

which we may analyze and upon which we may reason. The aim of the rational method is to enable us to say *ergo*, to prove, to forecast with greater assurance.

During the war the price of wheat was pegged at $2.25 per bushel. Since the peg was removed the price has varied, but perhaps with no greater violence than in pre-war days. Some wheat farmers probably felt that pegging at $2.25 was unfair and that they should have been allowed to profit by a higher price rising at times possibly to $3.00. It may be questioned whether they would by now have been better off. After the regulation was removed from sugar the price shot to about 26 cents a pound retail from which it soon ran off and has long wallowed about in a slough of despond at around a quarter of that figure. If the world had known its economics well enough to foresee this history would the fluctuations have taken place? If the laws of dynamical economics were as well known as those of celestial mechanics so that the course of production and of prices could be forecast for a life-time to a small fraction of 1 per cent business and banking and living might be less exciting but not less satisfactory.

Some will feel that economics is so complicated that the analytic method is hopeless. Surely we cannot now look forward to an analysis which shall be as perfect as that of the motions in the solar system. This, however, should not discourage us from making the effort to analyze as well as we may. The human body is complicated and the physiologist may well feel some despair; how he feels I do not know, but he certainly is making great progress in rationalizing physiology. Even if progress be slow the very effort at rationalization is itself a stimulus and abandoning the effort leads to a decay or relaxation of science even in its empirical parts. You are doubtless aware that around 300 B.C. great beginnings were made in medical science under Herophilus and Erasistratus who avoided all dogmatism, relying on careful observation and analysis, but that afterwards came the school called Empiric which confined itself to purely descriptive work and prohibited the inquiry into the general causes of things. Progress stopped.

Mathematical analysis has been used in economics by Bernoulli, by Cournot, by Walras, and by Pareto of Lausanne, Panteleoni of Rome, Marshall of Cambridge, and Edgeworth of Oxford. These four great leaders last mentioned have passed away in the last five years and it behooves this Association to make a special effort to see that their point of view is kept alive.

Our subject is quantitative economics. May I put in a word about the qualitative aspect? Many persons seem to believe that mathematics is essentially quantitative, but the first stages in analysis are generally qualitative and mathematics has a large branch which deals with qualitative matters. Your law of diminishing returns is not quantitative, unless it be combined with some such special hypothesis as Bernoulli's rule of moral values and then it is not true. In the present state of economic theory there remains much to discover on the qualitative side and I might almost say that as yet it is to this side that investigations such as those of Pareto most contribute. A good qualitative law may be better than a bad quan-

titative one. The introduction of serial grades A, B, C in rating students may have some advantage over the percentage system; to go over from that which is apparently quantitative to that which is certainly qualitative is not certainly a retrogression; possibly our methods of estimating performance do not satisfy the conditions imposed on quantitative measurement. Whether these ideas have any bearing on your present discussion of economics I do not know; I merely hint at them; I do not follow them through.

We turn to the empirical or statistical side. We find as the crude data numbers representing quantities and prices. We combine these numbers into indices of various sorts. We correlate these indices with each other with or without time lags. We thus attempt to define the present economic state and to forecast its trend. The method is numerical, surely, but is it quantitative? Let us waive the question. What is the present state of the subject? Certainly we are in a different phase from that represented fifty years ago by the circulars of Robert Goodbody. We have many more technical terms; we do much more arithmetic to guide our judgment of present and future than he. I assume that good as his letters were we are in a position to do better and that further progress will surely be made in the next fifty years.

Some might think that by taking enough variables into consideration, by attributing such weights and assigning such lags as would make a high correlation in the past between some ingenious index of business or financial or investment conditions, it should be possible formally, empirically to become an expert forecaster. Those who have read the presidential address of Yule before the Royal Statistical Society of London on "Why We Sometimes Get Nonsense Correlations Between Time Series" are already aware of the fact that all is not plain sailing in applying as by routine any given statistical method. Why do empirical relations break down? Because they may contain little of organic law and much of chance. In a complex world rare events are always happening; indeed many common events if taken too literally, too much in detail, are exceedingly rare. On a summer's day if you look about the sky you may see a cloud which reminds you of the face of Clemenceau, but it would not pay to look for him again, nor could one study meteorological data in enough detail to forecast the appearance of any such cloud figure; yet that the figures appear every child knows.

Then, too, correlations have to be so dreadfully high if they are to be much improvement on the judgment. If we have a business cycle of 40 months "more or less" say 40 ± 5 months, and if we have a forecasting index correlated to the business cycle with a coefficient as high as $r=0.9$ how much more do we know about the time the turn will come? Correlation reduces the mean error to the fraction $\sqrt{1-r^2}$, which for $r=.9$ is .44, and hence where we can write 40 ± 5 months without index, we may write $40 \pm .44 \times 5$ or 40 ± 2.2 months with it. The improvement is considerable. Yet possibly it is not more than any experienced person could make when carefully looking a few months ahead.

I would not give the impression that statistics is useless, that all we need is the rational study of cause and effect coupled with our judgment as to the relative weights of various factors at any particular time. We do need many detailed statistical calculations but they should be our slaves and not we theirs. And this is as true of theory as of empiricism, for the Circe of idealization may be practically as dangerous as the Sirens of chance. To make progress we must be masters of all our machinery of observation and of thinking and the most important single element to master is ourselves. The success of applied mathematics lies not in its mathematical method or perfection but in its successful application. The application of mathematics to economics has had successes in the past and will have more in the future. That is what this symposium means.

Wesley C. Mitchell.—Writing in *Schmoller's Jahrbuch* for June, 1926, Joseph Schumpeter, whose sympathetic interest in the development of economic theory in this country is known to all of us, remarked that a new controversy over method seems to be latent in the United States. Not so latent, he added, on second thought. For a militant group of younger economists is criticizing orthodox economics in a fashion strikingly reminiscent of Gustave Schmoller in the eighties, and calling for a reorganization of the science such as Schmoller demanded. "Change the relative emphasis put upon statistical and historical materials in this picture," Schumpeter summed up, "and we have, even to details, the position which Schmoller held throughout his life."

I do not share Professor Schumpeter's impression that a controversy over method is impending among American economists. Perhaps my belief is colored by my wishes. For I see no need for controversy on the problem of how to work, and no useful result likely to come of discussions of method conducted in a controversial spirit. In economics we have tasks of many sorts to perform, and we have workers of many aptitudes. That each of us can increase his efficiency by noting how others set about their tasks is probable. That each of us should recommend to others methods which have served him well is proper. That we should pay critical attention to the merits and the defects of the methods utilized by each other is part of our duty as scientific workers. That we differ in our forecasts of what may be accomplished in the future by particular methods is a matter of interest, which we can discuss with pleasure, perhaps with profit. But that we shall let our different predilections and opinions involve us in a controversy upon methods at large seems to me almost as improbable as it would be deplorable.

If a spice of controversial spirit can be tasted in today's discussion, it is injected by those who have spoken as representatives of traditional economics. To my mind, they have overstated the claims which are made for quantitative economics, and have passed over in silence what spokesmen for this type of work have said about the rôle which distinctions of quality must play in the future development of our science. What the spokesmen in question have "really meant," I take to be what they have really said—

not their remarks on the promise of quantitative analysis only, but also their remarks on the indispensability of qualitative analysis. I know no competent economist who would subscribe to the one-sided views which have been imputed this morning to persons unnamed. On the contrary, I agree that the man-of-straw merits the fate for which he has been set up. And if anyone should suggest that my notions about the service which quantitative analysis may render to economics are those of the straw man, I should still see no ground for controversy. All I need do in that contingency is to ask the critic to read what I have said before upon this topic.

But I attach slight importance to the fact that the case for quantitative analysis is often misconstrued. In scientific circles, mere misconstructions have but a short life. The positive positions taken by the previous speakers are more significant than their criticisms of what they take to be opposing views. No one has denied the usefulness of quantitative analysis on the one side, or of qualitative analysis upon the other. At most there are differences of emphasis. Indeed, the limitations of statistical procedure and the pitfalls it digs for the unwary have been emphasized mainly by a man eminent for his statistical accomplishments; while the speakers less addicted to statistical technique have noted the helpful part quantitative analysis may play in the gradual development of economic theory. That is as it should be; for the most competent critic of any method is the thoughtful worker who has learned its value and its limitations in the actual conduct of researches.

Certainly there is need of critical treatment of statistical procedure in economics. Everyone realizes that we should measure the phenomena which we treat whenever we can, and that increasing precision in measurement is a scientific gain. But there is danger that the seductions of statistical technique may blind enthusiasts to the imperfections and inadequacies of their data. One who elaborates statistical series in ingenious ways may get as far out of touch with reality as one who excogitates a set of speculative assumptions. Both types of work are prone to mislead inquirers who have less common sense than statistical technique or dialectical cleverness. If economists sometimes erred in the past because their reasoning rested upon assumptions which distorted reality in ways of which they were not clearly conscious, economists who rely on statistics may often err because their samples misrepresent the facts in ways which they fail to recognize. Happily, the one danger is as clear to competent workers as the other. Confidence in the fruitfulness of statistical analysis in economic theory should be increased by the precautions insisted upon by such statisticians as Professor Wilson, just as confidence in the use of qualitative reasoning should be increased by warnings such as Professor Schumpeter, for example, sprinkles over his *Wesen und Hauptinhalt der theoretischen Nationalökonomie*.

Doubtless such discussions as we are engaged in this morning have their value. Certainly I am not one to question the desirability of talking about the possibilities of quantitative economics. But I look forward to a day

when a round table such as we are now holding will be an anachronism. Qualitative and quantitative analysis are becoming so interwoven in economics that it will soon seem pedantic to question the indispensability of either. It is obvious that the statistician works with distinctions of kind quite as much as with distinctions of number. And everyone who confines himself to qualitative discussions admits the desirability of pressing forward to quantitative determinations as rapidly as possible. If we may judge the future qualifications of economists by the courses which are offered them in our university departments at present, our successors will almost to a man be trained in statistical methods as carefully as they are trained to discriminate among concepts. Blessed with a wider range of data than we possess, accustomed to state their problems in ways which facilitate statistical attack, they will doubtless give economics a measure of precision which we cannot attain. In proportion as our successors prosper in their undertakings, they will make antiquated what this generation accomplishes. Qualitative distinctions must remain basic in all their work; but they may transform many of our qualitative notions as radically as they may transform much of our quantitative procedure. That is merely a surmise, born of hope and nourished by evidence which is open to question. If anyone thinks otherwise, all I can say is, "The future will tell."

F. W. Taussig.—The value and importance of quantitative work for economics go without saying. No one has ever denied it, and I doubt whether any economist has completely neglected it. But its significance in recent work on our subject is due to the enormous growth of the available quantitative material, and the development, hardly less striking, of expert methods in this material. The expert use of statistical methods and of mathematics is among the most striking and promising developments in economic science during the past generation.

A real question arises as to the extent to which new results will be reached; as to the fields in which the most is to be expected. I venture to suggest that there are some parts of the subject in which the promise is great and others in which it seems to be small. I will not say that it is a matter of yes or no, but it does seem to me that it is one of more or less.

The subjects in which the promise is great are those within the range of what the older economists sometimes called catallactics—money and the level of prices, currency and banking, the circulation of money, cycles and crises, money cost and its relation to value. Here most valuable results have already been secured, and more are in sight. The theory of money has become susceptible of a precision of statements and of a precision of application and verification which were undreamed of before the mathematical economists began. Something of the same sort is true of commercial crises; though on this subject we are indebted more to the patient accumulation of facts and figures than to a more refined theoretical analysis. On the money costs of commodities and their relation to the prices of commodities we are just beginning to see our way to important results.

I may add another field, of a somewhat different kind, in which also much is possible. I refer to the time-old controversy on the distinction between rent and interest. The point upon which this distinction seems to me in the last analysis to turn is the effectiveness of competition in bringing about equality of return to the owners of "capital"—instruments made by man. If there be no greater tendency to equality of return than in the case of "land," there is no ground for distinction between the two. Whether there is a real leveling influence of competition as regards "capital" is a mere question of fact; and on this, quantitative research, rightly conducted and sufficiently broad, will immensely help us.

There is another range of questions, however, on which less may be expected, perhaps very little. These are the fundamental questions of the distribution of wealth. How does it happen that there is such a thing as interest? Is it well that there should be such a thing? What determines the rate of wages, and what determines the distribution of return between the owners of capital and the workers? Is it true, for example, that each factor in distribution receives a return based upon its specific or imputed productivity? I suggest no answer to these questions. I would suggest only that the answers seem not likely to be reached by statistical or quantitative investigation. We have to rely mainly upon the good old ways—discriminating observation of familiar happenings, interpretation of them in the light of what we know about men's motives and men's ways, reasoning from general principles. It need not be said that these are matters of fundamental importance, in which all of us have the keenest interest; and on them we seem likely to gain little light from the new efforts.

T. S. Adams.—My contribution to this discussion will be a modest one. It does not go to the merits of the larger questions here under discussion, but does perhaps have some bearing on the practical use of statistics and statistical arguments in the settlement of current tax problems. So difficult is the proper use of statistics in such problems that on many occasions in recent years I have almost reached the conclusion that the actual employment of statistical argument in the settlement of such questions has done more harm than good.

For instance, in discussing the effect of the so-called "consolidated return," opponents of this provision state, on the basis of statistical evidence, that the larger corporations which utilize the consolidated return have greatly reduced their taxes by its use. On the surface, I think, this is probably true. In the consolidated return, affiliated corporations eliminate intercompany gains and are permitted to charge the deficit or loss of one subsidiary against the gain or profit realized by another subsidiary or by the parent corporation. But it is also true that during the life of the excess-profits tax the consolidated return closed avenues of avoidance or evasion which would have reduced the tax revenue many millions of dollars. It is of course impossible to measure the revenue loss prevented over against the revenue loss actually visible and measurable. It is highly probable that the former was greater than the latter, but actual loss stated

in figures carries more weight than probable loss averted, which of course can never be measured.

Tax problems more frequently than not raise a number of complex issues, some non-quantitative in character, some capable of measurement but not yet reduced to statistics, and some capable of statistical measurement. The latter group may be and usually are far less important than the non-statistical factors. But the mere fact that one of the factors can be reduced to quantitative form gives it, in argument and discussion, a weight out of all proportion to its relative importance.

Another danger is the use of short-run statistics to measure long-run factors or effects. Thus, the Treasury Department contends that in the long run low or moderate surtaxes will yield greater tax revenue than high surtaxes. In the Revenue Act of 1926 surtaxes were greatly reduced, such reduction being applied to income for 1925; yet the income subject to surtax for 1925 greatly exceeded the similar income returned for 1924, when higher rates were applicable. This appeared to confirm the position of the Treasury. Now, however, it is probable that the tables are turning. Enough is now known about the income tax returns for 1926 to indicate that the income and tax returned for 1926 (payable in 1927) will be less than the income and tax returned for 1925 (payable in 1926), although the rates applicable to 1925 and 1926 were the same. These figures are now being used to disprove the theory of the Treasury. As a matter of fact, neither set of figures proves anything. The thesis of the Treasury is one applicable only to the long run and can only be tested by the most careful statistical analysis covering a period of years. Personally, my experience has led me to place far more confidence in non-statistical than statistical analysis in the solution of such problems.

I have obviously said nothing against the proper use of statistics and statistical arguments. My real point is that it is infinitely difficult in practical discussions to confine the use of statistics within the proper bounds. Particularly should the statistician beware of assuming that statistical relations or even statistical uniformities applicable to the past will apply equally in the future. The wiser historians know that an unusually dangerous fallacy lurks in the assumption, often unconscious, that history will repeat itself. It may or it may not. The statistician must be equally on his guard with respect to past history reduced to the quantitative or statistical form.

JOHN D. BLACK.—It is not difficult to believe that Professor Mitchell's presidential address three years ago on "Quantitative Analysis in Economic Theory" is properly understood as he indicated at the round table a year ago, and particularly as he has indicated today. But it must be admitted surely that there are some statements in it which give ample excuse for other interpretations. Take, for example, his statement that the newer quantitative workers will not take the trouble to refute the old explanations, but will merely disregard them, and that they will gradually crystallize a new system of economic theory based on quantitatively

determined conclusions. This statement in my judgment has done considerable harm in the last three years. Young men who know little of economic theory have taken it to mean that this is nothing for them to worry about, that they will never miss it, that all they need to do is to get busy with some data and develop some principles of their own; that the only principles worth while are those in the making now by quantitative methods. This is no idle fancy. In the field of agricultural economics, with which I am most familiar, the great need is not more data to analyze quantitatively, but a better grasp in qualitative terms of the elements of the problem. We have had tons of data collected on all sorts of subjects; but all too commonly we have no significant results largely because the theory was not worked out in advance. There is abundant evidence that a similar condition maintains in some other fields. Hence, there is just as much of a place for an eloquent plea for more qualitative analysis as for more quantitative analysis.

I am sure Professor Mitchell does not want to be misunderstood as he is constantly being misunderstood by reason of such statements as I have indicated, and I can think of no greater service that he can render to the cause in the next few months than to rewrite his presidential address in such a way as to leave out a number of equivocal statements.

Professor Wilson has in a very timely manner pointed out the significance of the analytical attack as distinguished from the merely empirical, and has pointed out how the science of medicine languished when it ceased being analytical for a time. There is a strong suggestion of a largely empirical science in much that is being said these days by those that espouse quantitative methods. At the round table a year ago, it was even urged that we foresake our definition of an economic law in terms of causation and be satisfied with a definition merely in terms of correlation. All sorts of things are getting to be called laws these days. If economics is to be a developing science, it must not be satisfied with statements which merely summarize or describe a bit of past experience. The relationships which are found to exist in a period or group being studied must be analyzed qualitatively to see if adequate reasons can be adduced for considering some of them as universal truths. A mere empirical statement is often very useful; but it is seldom a very safe guide. We can predict safely only on the basis of more universal truths.

It thus appears that the qualitative and the quantitative must work together. The qualitative analysis states for us the terms of our problem. The quantitative then gives us a measure of the factors which enter into it, and of the rate at which they vary with each other. The qualitative then enters to help us interpret our problem and derive our inferences from it. Then finally when we begin applying our principles to a concrete situation, we become interested in the quantitative relationships between the factors again.

The economists of the future who make the real contributions to the progress of our science must be men with more erudition than in the past and not less, as has been suggested. There has been, it is true, a tendency

to look upon men who get some data together as the real contributors to economics these days. But this superficial view has never been accepted by real scholars. The economist of the future must know his quantitative method as never before, but along with it his philosophy of mathematics, his logic, and his psychology.

John Candler Cobb.—In listening to the discussion today I have been struck with the apparent variation in definition with which the different speakers have used the term "quantitative." These variations tend to make discussion futile, and I am inclined to think much of the difference of opinion expressed is based on a difference of definition rather than of essence. Quantitative data are not necessarily statistical, and statistics are not quantitative data unless they can be and are stated and defined in form for use as premises in the consideration of specific problems. The two terms have no necessary relation. Also the difference between qualitative data and quantitative data is not a difference in the nature of the data but is a difference in the method of statement. It is impossible to discuss these points within the time allotted me today and I merely bring them up to go on record and to say that I have treated the subject quite fully in an article on "The Significance and Use of Data," which will come out in the next *Economic Journal* (March, 1928). This paper was written as result of a methodological study of economics and sociology in which I have been engaged for the past two or three years. I approached the subject on the basis that economic methodology is not primarily an economic question, but is rather a question of the development of methodology along scientific lines in economics. The suggestion back of this thought comes to me from Marshall, but apparently no one had made an analytical study of the sciences generally with the purpose of comparison and a concrete application of results.

With this in view the investigation has consisted of a study of the different sciences and an analytical comparison of the work being done with that in economics and sociology.

(Editor: The balance of Mr. Cobb's discussion consisted mainly in the description of his investigation and a brief digest of his findings. Since this is to appear elsewhere, as mentioned, it is not included here. During the discussion from the floor remarks were made by Dr. Henry Schultz, University of Chicago, Dr. E. M. Burns, London School of Economics, and Dr. Ragnar Frisch, University of Oslo. Space limitations prevent the inclusion of these remarks.)

POST-WAR FLUCTUATIONS IN WHOLESALE COMMODITY PRICES

By Lionel D. Edie
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Between 1925 and 1927 wholesale prices in the United States declined about 12 per cent, and reached a point approximately as low as that in the extreme depression of 1921. Indexes of the cost of living and of the general average of all prices are still 5 to 10 per cent above the 1921 low, but during the past three years they have sluggishly exhibited the same kind of weakness which has been acute in wholesale prices. Prices in other countries have shown a similar decline. These movements have aroused grave concern in Europe and the United States and have led to wide discussion of the question: Has the world entered the initial stages of a prolonged shortage of gold and a long-time decline of prices? This question requires two lines of analysis: on the one hand, the rate of production of new gold; on the other hand, the economies in the use of gold.

The annual rate of production of new gold necessary before the War to preserve a stable long-time price level has been estimated by Cassel at 3 per cent of the existing world stock of gold. This estimate was reached by first observing that certain points in the long-time movements of prices from the discovery of gold in California to the World War were at approximately the same level, and then computing the annual rate of increase in world stock of gold between such points. Gold increase between dates when the price index was unchanged was assumed to be the rate of increase necessary to keep prices stable. The resulting hypothesis, that approximately a 3 per cent per annum increase in gold supply was normally required before the War, stands up well under tests of verification, whether applied to wholesale prices, cost of living, or a composite price index.

In order to make this pre-War estimate of use in the post-War era, it is necessary to estimate the secular trend of gold requirements since 1913. In spite of disturbances of the War period, it is possible to arrive at fairly accurate estimates. The rate of growth was arrested in Europe, but not in the remainder of the world. From a study of population and of physical volume of production and trade since 1913 I have arrived at the estimate that the rate of secular requirement of gold supply should be not more than 2.0 per cent from 1913 to 1925 and that the most reasonable assumption for the period since 1925 and for the proximate future is a rate of about 2.7 per cent.[1] If the 1913

[1] For supporting data and analysis, see my monograph on *Gold Production and Prices Before and After the World War,* Indiana University Studies, 1928.

world stock of gold money is carried forward at these rates, the estimated normal stock for 1925 becomes $9,800,000,000 and for 1935, $12,800,000,000. The actual stock in 1925 was approximately the the same as the estimated requirement; hence there was no gold shortage in that year. However, the actual stock in 1935, at present rates of gold output, would be fully $1,000,000,000 below the normal requirement. In order to keep the actual up to the normal until 1935, it would be necessary that annual production of new gold available as money be more than double the present production.

Is there a reasonable likelihood that gold production can be substantially increased? The obstacles to increased production are as follows: First, a rate of exhaustion of better grade ores which offsets increases in operating efficiency; second, prohibitive costs which preclude the exploitation of present known areas of low grade ores; third, failure of geological surveys to hold out hope of discoveries of new ores rich enough in gold content to permit profitable exploitation; fourth, negative results of scientific experiments in transmutation of baser metals into gold. On the latter point, Dr. H. H. Sheldon of New York University, who has reproduced the transmutation experiments, declares, "I wish to assure you that there is no likelihood of any transmutation experiments that will upset the gold standard for the next hundred years." Dr. Frederick Soddy, English chemist, referring to the alleged discoveries, writes, "The opinion of the scientific world is strongly against their acceptance." Even if the scientific achievement were demonstrated, the much more formidable task of making commercial production possible would remain. Consequently, barring some wholly fortuitous event, the outlook for a sustained increase in gold production is thoroughly discouraging.

Is there a possibility that a prospective shortage in gold production may be offset by economies in the use of gold? Many people claim that the gold exchange standard has introduced tremendous economies in gold usage and that these economies will more than counterbalance any limitations on the rate of output of the gold mines.

The gold exchange standard revolutionizes the use of gold in two ways: first, by withdrawing gold from circulation and, second, by increasing the efficiency of reserves either through lowering reserve ratios at the banks or through pooling reserves in a few financial centers.

With regard to the first type of change, if we start with the known fact that more than $3,000,000,000 of gold is now in central reserves which would not be there if pre-War circulation habits of gold usage prevailed, and compute the superstructure of bank notes and deposits which can be erected on this base, we find it ample to support at the present time a price index of about 135 (1913 being taken as a base

of 100).[2] By virtue of the single factor of withdrawing gold from circulation and concentrating it in central bank reserves, the efficiency of gold has been so enhanced that the existing stock of gold money makes possible an index today of about 135, without any lowering of reserve ratios.

The difference between an index of 135 and today's actual indexes reflects primarily the second feature of the gold exchange standard; namely, the economy due to pooling of reserves internationally and the lowering of reserve ratios. Since wholesale prices stand today at an index of about 145, we may say that only about 10 points in this index are attributable to the pooling of reserves or lowering of reserve ratios. In the case of the cost-of-living index, which today stands at about 170, 35 points in the index, or one-half the increase since 1913, is attributable to these reserve changes. The general average of all prices shows about the same comparison as the cost-of-living index.

Thus, by quantitative estimates, we find that the gold exchange standard gives rise to an enhanced efficiency in gold usage in the sense that withdrawal of gold from circulation would warrant a present price index of 135, and international pooling of reserves or lowering of reserve ratios would account for anything over that index, depending upon whether wholesale or other price groups are under consideration.

However, these efficiencies in gold usage which account for our present price level do not permit any let-up in the yearly production of new gold. If all such efficiencies prove to be permanent, there still remains the necessity of an increase in world monetary stock of 2.7 per cent per annum. That this view is sound will be apparent as soon as one examines the true nature of the alleged economies in the use of gold. New efficiency in gold usage may do one of two things: First, it may give higher prices on the same gold supply; second, it may give the same prices on a reduced gold supply. Our present gold exchange standards do the former, almost exclusively. To insure a normal growth of the new superstructure of credit it is necessary to have a normal growth; namely, 2.7 per cent per annum of the gold base underlying that structure. All that the new economies have led to has been the luxury of a cost-of-living index 70 per cent above the pre-War. They have not led to any lessening of gold production requirements. Gold economies have served solely to permit a price extravagance. They have made possible a higher price level but not a lower gold supply. They have diminished the value of gold, but have not diminished the required production of gold. Hence in a fundamental sense they are not economies at all. They do not reduce in the least the annual

[2] For an explanation of the evidence and analysis leading to this estimate see monograph referred to above.

gold requirement of 2.7 per cent necessary to avert a long-time decline of prices.

But, even though the present gold exchange standard has not brought real economies, may it not be that future developments of that standard will do so? In answering this query, we should do well to realize that the present gold exchange standard was forced upon the various countries by the exigencies of war. It was not an act of premeditated choice. To no small extent, it is looked upon by them as a makeshift until they can accumulate domestic gold reserves. Few countries, if any, have relinquished the fixed purpose of building up gold stocks at home as rapidly as circumstances permit.

In spite of these considerations it is conceivable that a progressive international pooling of reserves might take place by mutual agreement. I say it is conceivable just as in a former day international bimetallism at a fixed ratio was conceivable. But such a progressive pooling of reserves would involve a kind of international "Federal Reserve System," a gold League of Nations. Recollection of the quarter century of repeated panics necessary to persuade the United States to pool domestic reserves, and recollection of the hold of nationalism on our post-War political thought, may well make one dubious of the prospects of the new gold disarmament under which other countries allow us to keep their gold reserves and we allow them to keep ours.

There are many who have faith that central banks will by informal co-operation arrive at some plan of managed currency or stabilized price level. This is possible in so far as economic intelligence is involved but there arises the question of public understanding and political administration. It is worth working for but as realists we face a condition as well as an aspiration. Perhaps, a decade or two in the future, after a rising purchasing power of gold has aggravated the burden of the war debts, has worked its peculiar discrimination on agriculture, has driven home its inequities in distribution of wealth and income, and has given rise to a new prophet who, in the name of free paper instead of free silver, wages war on gold, perhaps, at such a time, necessity will persuade people to adopt schemes for long-time price stabilization which now command assent only in the vision of economists. Meantime, as a matter of realism, the danger which confronts the financial world for the proximate future is a gold standard subject to the fluctuations of demand and supply of gold and to the disturbances of severe secular variations in the purchasing power of money.

While recognizing fully that our technique of analysis of secular trends, or if this term is objectionable, of long-time movements, in the field of prices is far from complete, nevertheless I am convinced that

it does afford the basis for valuable tentative inferences and that such inferences constitute true progress in monetary science. In place of loose, vague, and mysterious notions to the effect that since the War everything is abnormal and upset, and that some incomprehensible monetary revolution has taken place, we are able to arrive at rather definite propositions about long-time movements in the post-War era such as are illustrated by the following summary:

1. The long-time movement of gold prices at wholesale since the War has been horizontal, and the price decline from 1925 to 1927 has not been occasioned by a shortage of gold and is not the initial stage of a long-time price decline.

2. However, unless thwarted by some fortuitous event, the initial stage of such a long-time decline may be very clearly and acutely felt by about 1935.

3. The withdrawal of gold from circulation would account for a price index today of about 135 (1913=100), without any lowering of reserve ratios.

4. The difference between 135 and actual wholesale indexes of about 145, or about 10 points, is attributable chiefly to the international pooling of reserves and the lowering of bank reserve ratios.

5. The gold exchange standard has given higher prices on the same gold supply rather than the same price level on a lessened gold supply and hence has effected no real economy in the annual 2.7 per cent requirement of new gold.

In addition to the long-time aspect of the post-War situation, there is an important short-time aspect; namely, the violent instability of prices inherited from War inflation and the attempt to recover that relative degree of stability normally furnished by the gold standard. This period is particularly fruitful for a study of dynamic phases of price behavior because it is characterized by such extreme instability of prices. Both the rate of change and the amplitude of fluctuations are so violent that processes show up in high light which in more normal times would be scarcely discernible.

Certain outstanding phases of the price turbulence of this period are here singled out for special comment. It should be borne in mind that the comment on each phase is the briefest possible statement of the results of investigation. The detailed procedure involved in reaching these results cannot be presented in a paper of such limited scope.

First phase—from the beginning of 1915 to the beginning of 1918: In most countries, wholesale prices lagged behind money. (By money is here meant either notes or deposits, depending upon which is the predominant medium of exchange in any given country.) The per-

centage of increase of prices corresponded rather closely with that of money.

Second phase—from early 1918 to the 1920 peak: In most countries wholesale prices rose at about the same time as money, with no clear lag either way. The percentage of increase of prices was much greater than that of money.

Third phase—from 1920 to 1922: In most countries, wholesale prices declined first, money later, if at all. The percentage of decline of wholesale prices was much greater than that of money.

During these periods, wholesale price fluctuations were more extreme than those of a cost-of-living index or of a composite index such as that computed by Carl Snyder. It is especially noteworthy that from 1918 to 1920 the rise of wholesale prices in the United States was much greater, and from 1920 to 1922 the fall was much sharper, than the rise and fall of general prices. This discrepancy illustrates the unreliability of wholesale prices as a measure of the general purchasing power of money, especially during a period of acute instability of prices.

Fourth phase—from 1921 to 1923: In certain countries of extreme inflation, such as Germany and Austria, money lagged behind prices. The percentage of increase of prices was much greater than that of money. In Austria, prices rose about two and one-half times as much as note issue; in Germany, about eleven times as much.

Fifth phase—period of return to gold by countries of extreme inflation: Wholesale prices remained relatively stable, regardless of large increases in volume of new currencies. Note circulation in both Austria and Germany more than doubled without any inflation of prices.

Perhaps the most remarkable characteristic of these five phases of price instability is the shifting sequence and proportionality of change in the factors involved. At one time we have inflation with money preceding prices; at another, coinciding with prices; at another, lagging behind prices. At one time we find wholesale prices changing by the same amplitude as other prices; at another time, all out of proportion to other prices. At one time we find large increases of money accompanied by the same degree of increase of prices; at another, by an increase of prices ten times as great; at another, by no increase of prices at all.

This shifting of relations is not confined to money and prices alone. It extends to the outside factors, such as unbalanced budgets, foreign exchange, industrial and trade conditions, and psychological changes reflected in optimism or pessimism. How do the inter-connections of both money and prices with these outside factors differ from phase to phase of inflation, deflation, and stabilization? In order to answer

this question, we may observe what happened in each of the five phases of price history just outlined.

First phase, 1915-1918: Urgent demand for war materials and a shortage of essential commodities led directly to a sharp rise of prices in such groups of commodities. The balancing of government budgets by note expansion and by borrowing from banks combined with the lending of private credits at low rates of interest flooded the countries with new purchasing power which was used in a proportionate bidding up of all prices a few months later. In turn, each such rise of prices led the people and the governments to clamor for more money in order to carry on business at the new level.

Second phase, 1918-1920: A post-War trade boom, characterized by a wave of extravagant consumption, a vigorous foreign demand, and an extreme speculation in land, securities and commodity inventories, found the whole community unusually receptive to new money. The new money was forthcoming, partly as a result of continued meeting of fiscal deficits by note issue and borrowing from banks, partly as a result of lavish private lending at low interest rates. This new spending power was used to bid prices up to new heights, and each price advance led to the expectation of further advances which in turn induced people to spend to the limit today in order to avoid the higher prices of tomorrow.

Third phase, 1920-1922: Maladjusted production, waste and rising costs in industry, excessive inventories, reaction from consumer extravagance, collapse of foreign markets, and acute internal dispersion of prices undermined the post-War boom. The immediate occasion for deflation was an advance of interest rates in the United States, England, and certain other leading countries and an expectation of credit contraction. The struggle to pay off debts and to remain solvent forced the liquidation of commodities, which in turn forced a precipitate fall of prices. At a lower level of prices, less bank credit was demanded by business. Even those who had funds held off spending in the hope of buying bargains at still lower prices in the future.

Fourth phase, 1921-1923: In Germany, Austria, and other countries of extreme inflation the prospect of continued fiscal deficits and of indefinite expansion of note issue destroyed confidence at home and abroad, thereby laying the foundation for swift bearish speculation in exchange and currency. Depreciation of the exchanges was promptly followed by internal depreciation of currencies, which in turn was followed by a less than proportionate expansion of note issue. The value of money fell so much faster than the quantity of it could be increased that inflation failed utterly as a source of fiscal revenue and as a means of carrying on trade. At that stage the primary characteristic

of inflation was the dependence of prices and note issue upon exchange rates, loss of confidence, and bearish speculation.

Fifth phase, 1922-1925: In Germany, Austria, and similar countries, a return to gold, accompanied by balanced budgets, and international stabilization credits, served to restore confidence at home and abroad. Velocities of circulation slowed down to normal, foreign and emergency currencies were displaced by the new stable domestic currencies, and money went through a rapid expansion which did not result in price inflation because it represented a process in which money was growing up to the needs of trade.

The primary purpose of this synopsis of recent price history is to bring out the sharp diversity of relationship which may exist between the various price-making factors. Of what use is a clear conception of this diversity of relationship? It would perhaps be of use as a means of satisfying sheer historical curiosity about the record of the past. It would perhaps be of use in showing how the next war can be financed without resort to inflation. It would perhaps be of use in proving or disproving the quantity theory or some other theory of the value of money. However, none of these uses is of primary concern in the present analysis. The primary concern here is to indicate the importance of making the same kind of approach to the price fluctuations of normal peace times as has been made to those of abnormal times; namely, an approach which stresses the mutations in relationship of price factors from one type of fluctuation to another.

Just what does such an approach involve? What specific questions does it treat as significant? First, instead of reworking the old problem in rigid mechanical causation as to whether M is the cause of P or P the cause of M, we investigate the changing interactions of M and P upon each other and the changing lags and amplitudes of various measures of M and P from stage to stage of price fluctuations. Moreover, we investigate the changing interactions of both M and P with outside factors—industrial, fiscal, psychological, and the like. For example, the whole set of interactions typical of a financial crisis is differentiated from those typical of industrial revival. This approach requires the constant use as a tool of thought of the mathematical truism, $MV = PT$, but divorces the truism as such from the stereotyped dogma of causation which has grown up around it.

Second, and by way of more concrete application of this general criterion, this approach seeks to give more definite analysis to disturbances in the demand for or supply of certain groups of goods. During the War such disturbances related to essential versus nonessential commodities, to exported versus imported or domestic commodities, to price-fixed versus non-price-fixed commodities. Under or-

dinary peace time conditions they relate to commodities influenced by harvests, inventions, strikes, and by changes in fashion and taste, changes in foreign demand and foreign competition, changes peculiar to sheltered industries, and changes accruing from the business cycle. Price disturbances originating in any of these special groups upset the all-commodity indexes and create reflex disturbances in price groups all along the line.

Third, this approach traces the effectiveness of deliberate pressing of money into the market, or deliberate taking of funds out of the market, from phase to phase of inflation and deflation. When governments were forcing money into the market as a means of balancing their budgets, there were times when the new money induced a price increase equally as great, times when it induced a price increase a thousand per cent as great, times when it induced no price increase at all, and times when it induced a price decrease. At present, the chief agency acting deliberately to inject money into the market is the central bank. There are times when injecting money in this fashion leads to reckless inflation all along the line, times when it leads to inflation of securities or real estate accompanied by deflation of commodities, times when it cannot check a violent liquidation of commodities and collapse of prices, times when it can ease the process of deflation, and times when it can bring deflation to a halt and set prices on an upward course. Our task is to define the signs by which to know what kind of response to expect under any given conditions.

Fourth, this approach relates price behavior to the changing temper of the business community, to the psychological situation, to what Pigou so aptly calls "the errors of optimism and the errors of pessimism." Of course, the quantity of money is one of the objective factors which shapes this subjective factor of confidence, but what we need to know is why at times more money engenders cautious optimism, at times reckless speculation, at times panicky pessimism, and at other times a neutral psychological reaction.

To be perfectly clear, let us draw all the threads of this analysis together. The acute instability of prices in the post-War period is very incompletely and inadequately explained by such rigid static formulæ as the law that normally M tends to cause P or P to cause M. It can be explained only by ascertaining the shifting interaction of M and P with each other from stage to stage of inflation, deflation, and stabilization, and the shifting interaction of both M and P with important outside factors during these same respective stages of change. The abnormal instability of post-War prices differs from the normal dynamic character of price behavior chiefly if not entirely in the degree of amplitude of change. The post-War violence of fluctuation magnifies

the price phenomena of more normal periods, and suggests the kind of approach needed for more adequate understanding of ordinary periods. The essence of this approach is to ascertain the changing relations of price-making factors from one phase of price movement to another. The next step in defining this approach is to apply it to some specific cases of price history since the War. Business cycle price movements offer the best field for this endeavor. Owing to limited space, I shall deal with only one phase of the cycle; namely, deflation. The first deflation period selected for consideration is 1925 to 1927.

Between the first quarter of 1925 and the middle of 1927 wholesale prices in the United States fell, according to various indexes, from 11 to 15 per cent. During the same period, a world-wide decline of wholesale prices was under way. In England, this decline was about 17 per cent, and in fourteen leading countries having a gold basis, the average decline was about 12 per cent. Simultaneously, these same countries, with one or two exceptions, underwent a decline of the cost of living, although the percentage of its decline was only about half that of wholesale prices.

This general decline was accompanied by a marked internal dispersion of prices which may be illustrated by the experience of the United States. Comparisons may be made between the peak of 1925 and the low point of 1927. Cost of living according to the Bureau of Labor Statistics index fell only 2 per cent, and according to the National Industrial Conference Board and the Massachusetts Wage Commission indexes, only 6 per cent. The revised composite index prepared by the Federal Reserve Bank of New York and including ten different groups of prices, fell only 2 per cent. Evidently the general purchasing power of the dollar changed very little. However, certain groups of commodities in wholesale markets fell sharply. Thus, house furnishing goods fell 19 per cent, cotton goods 22 per cent, silks 28 per cent, grains 32 per cent. Farm products at the farm fell 18 per cent, whereas non-agricultural commodities at wholesale fell only 10 per cent. Factory wages increased about 4 per cent and farm wages about 3 per cent. Twenty basic commodities declined 18 per cent. Export and import prices declined nearly 28 per cent whereas prices of goods primarily domestic in character fell only 10 per cent. In general, the decline was greatest in wholesale prices of farm commodities, basic commodities, and export and import commodities. It was least in domestic industrial commodities, in commodities ready for the consumer, in commodities involving a heavy labor cost, and in the cost of living. The decline was negligible in the composite index of all prices which is the most accurate index we have of the general purchasing power of the dollar. Although these inequalities of prices are

of great importance, I shall not pursue the subject further because another paper at this session is devoted to that phase of the price situation.[3]

The international connections of these price movements are particularly important. Prices of goods important to our export trade headed the decline at the beginning of 1925. Import prices, though slower in starting downward, eventually went to equal extremes. Price indexes of basic commodities and of farm commodities, reflecting quickly the tone of international markets, were leaders in the general decline. Basic commodities and farm commodities fell nearly twice as much as sheltered commodities and export and import commodities fell nearly three times as much. The shock to prices in the United States was greatest in those lines which are most sensitive to the commerce of the world.

In order to understand the international repercussion of prices, we must appreciate the importance of the return to gold by England early in 1925 and by about a score of other leading countries either shortly before or shortly after England's decisive action. The setting varies from country to country, but the basic economic problems are much the same everywhere. In most essential respects the experience of England fairly well epitomizes that of other countries; hence, fundamentally an analysis of the experience of England will apply, with certain modifications, to that of the other countries. The Committee on the Currency and Bank of England Note Issue, after hearing many expert witnesses, clearly forewarned that a return to gold in 1925 meant "a period of credit restriction and falling prices." The outlook was described as follows: "We must still be prepared to face a fall in the final price level here of a significant, though not very large, amount, unless it should happen that a corresponding rise takes place in America, if the rate of exchange is to be restored to or held at the pre-War parity." In other words, all countries returning to gold had to scale the internal gold values of their currencies down to the value of the gold dollar. The United States set the pace, all other countries had to adjust their gold values to hers. This meant either inflation in the United States or deflation outside the United States. Europe hoped for the former, but finally had to face the latter.

The British committee above referred to had its eyes wide open to the possibilities and recommended strong measures of credit restriction. It declared: First, "The existing limitation of that issue [i.e., fiduciary currency notes] should be strictly maintained"; second, "It is possible that some temporary increase in money rates will be necessary to bring

[3] F. C. Mills, "Post-War Prices and Pre-War Trends," published by the American Statistical Association.

about the necessary adjustment of sterling prices to the gold level." In fact, combined circulation of Bank of England Notes and Currency Notes was contracted about 7 per cent, during the ensuing two years, the discount rate of the Bank of England was raised from 4 to 5 per cent, and private deposits of the Bank of England were contracted about 10 per cent. These restrictions helped to keep exchange at par and to lower commodity prices. These readjustments were distressing to business and contributed to industrial depression and increased unemployment throughout most of 1925-1926. The depressed markets transmitted their influence to outside countries in the form of drastic cuts in export and import prices. Meanwhile, the process of making payments to the United States on account of war debts meant pressure in the direction of building up credits abroad by selling merchandise at low prices. The complex process of return to gold may be summarized as credit and trade restriction, industrial depression and readjustment, and price deflation relative to United States prices. This process was operative in countries such as France and Italy which were preparing for return to gold, as well as in the score or more of countries which actually completed the return. The process was world-wide in its influence and the explanation must be world-wide in scope.

The predominant European opinion, while conceding that some price decline was inevitable upon the return to gold, nevertheless holds that ultimately the United States was responsible for the extreme international deflation which actually ensued. They say that other countries were forced to restrict credit excessively because of the harshly restrictive credit policy of Federal Reserve authorities. They accuse the United States of sterilizing gold, of neutralizing, hoarding, locking up, and burying gold. Is the accusation well founded?

The reply of the Federal Reserve Board is as follows: "The causes of the general price recession in recent years lie in industrial and trade conditions rather than in financial developments."[4] Let us examine for a moment these industrial and trade conditions? An ultra-cautious business psychology prevailed, partly as a reaction against the predictions made by Europeans that the United States was due for inflation, partly as a result of the fear that the rampant speculation in stocks and real estate might get a foothold in commodity markets, partly as a result of warnings and admonitions emanating from Federal Reserve authorities themselves. Moreover, certain of the commodity markets were badly disturbed. Agricultural prices were severely depressed as a result of poorly balanced world supply and demand. Export and import prices were also deeply depressed. The outside world was forced to cut under our prices enough to ward off unfavorable trade

[4] *Federal Reserve Bulletin*, May, 1927, p. 313.

balances, support foreign exchange rates, and build up credits abroad wherewith to meet international debts. With business attitudes thoroughly conservative, and with agricultural and international prices driven downward, everyone became extremely cautious in making committments. "Get out of debt" was a watchword which summed up the situation. Business was literally afraid of money. Banks outside New York found credit a drug on the market and sent their plethora of funds to New York for speculative loans. "Easy money" was in essence a "fear of debt." In spite of this "flight from commercial funds" and in spite of the fall of prices, the volume of production was well sustained. This rather unusual production accomplishment was made possible by a remarkable campaign for increased efficiency, utmost economy, and slashed production costs. In brief, alarmed by inflation in stocks and real estate, dragged downward by farm prices and export and import prices, obsessed with the notion that commercial debt was a dangerous thing, commodity markets drifted into a general price recession.

I think it will be granted by everyone that such "industrial and trade conditions" do tend to pull prices down, and that some price recession was called for by fundamental economic conditions.

Nevertheless these conditions were not exclusively the outgrowth of price laissez faire, and we would do well to take stock of what the Federal Reserve authorities actually did during this crucial period. First, they raised the rate of discount. In February, 1925, they raised the rate in New York from 3 to 3½ per cent and in November, they raised the rate in four other districts from 3½ to 4 per cent. In January, 1926, they raised the New York rate to 4 per cent, thus making the rate at all banks uniform. Except for a brief cut in the New York rate in the summer of 1926, rates at all banks remained at 4 per cent until the late summer of 1927, when between July 29 and September 13, rates at all banks were lowered to 3½ per cent. Second, they intensified the caution and conservatism of business men. They started publication of the volume of brokers loans and put forth marked effort to prevent a leakage of Federal Reserve credit into stock market or other speculative uses. The mental attitude of business was deliberately molded by Federal Reserve policy.

However, the third and most significant aspect of Federal Reserve policy was the restriction of permanent reserves of member banks. Our gold stock was $4,547,000,000, in January, 1925, but it fell below that figure during 1925 and 1926 and did not again reach it until February, 1927. At a normal rate of growth, our member bank reserves increase around 5 to 6 per cent per annum. This trend of growth is necessary if member bank reserves are to keep pace with the

economic growth of the country. The two major sources of permanent reserves to maintain this trend of growth are increases in gold stock and purchases of United States securities by Federal Reserve banks. The former permits primary expansion, the latter secondary expansion. Between January, 1925, and January, 1927, not only did gold stock decline but also United States securities owned by Federal Reserve banks declined sharply, with the net result that permanent reserves for member banks fell about $200,000,000 in two years time.

The member banks sought to offset this contraction of permanent reserves by direct borrowing from the Reserve banks. However, direct borrowing furnishes only temporary funds whereas what was required was permanent funds. Of course, the Reserve banks stood ready to rediscount freely, but, to quote from the 1926 report of the Federal Reserve Board, such funds are "primarily intended to be used in meeting the seasonal and temporary requirements of members" and Reserve banks were "using their influence to discourage member banks from making continuous use of the lending facilities of the Reserve banks."[5] It is small wonder, therefore, that during this period, actual member bank reserve balances increased less than 2 per cent per annum whereas the normal or required rate of growth may be estimated at about 5 or 6 per cent. In brief, at the very time when gold stock was diminished, the Reserve banks accentuated the shortage of permanent reserves of member banks by lowering their holdings of United States securities, and thus forcing the member banks to rediscount. But when they rediscounted, they were warned that they must not use the proceeds for continuous needs or permanent reserves.

There was plenty of gold in Reserve bank vaults, but member banks were forbidden to use it for secondary expansion. In this sense and to this degree, gold was locked up, sterilized, demonetized.

This restrictive policy, instead of counteracting the dull and frightened demand for commercial funds and the general weakness of prices, greatly accentuated these tendencies. However, defendants of the Federal Reserve policy have declared that "there was no demand for additional funds," and hence the policy did not restrict funds. The term "demand" in this connection is quite ambiguous. In fact, demand is, with very rare exceptions, sufficient to absorb on some terms all the funds available. As the Board itself has recently put it: "Member banks, as profit-making institutions, at all times make use of their reserves to the full extent authorized by law. Consequently, an addition to the reserves of member banks always gives rise to a growth in the volume of their operations."[6] Clearly, if reserves had not been locked

[5] *Annual Report,* 1926, p. 5.
[6] *Federal Reserve Bulletin,* Sept., 1927, p. 269.

up, additional funds would have gone into circulation. This aspect of demand for funds is of fundamental importance.

The whole complex situation illustrates the necessity for an additional criterion of central bank policy; namely, the increase of investments of Federal Reserve banks at a rate sufficient to insure a normal rate of growth, or secular trend, of member bank reserves. Failure to observe this criterion from 1925 to 1927 justifies in part the European view that the United States was responsible for the world-wide price trend. I say "in part" because it is freely admitted that fundamental economic conditions in the United States made some price recession inevitable and desirable. But when in 1926 the recession passed into extreme stages and was aggravated by restrictions on permanent reserves of member banks, it was within the power of the Federal Reserve authorities to exert upward pressure on credit and prices and this they did not do.

I have thought it worth while to go into the period in some detail because I am convinced that it illustrates our failure as yet to develop clear standards of Federal Reserve policy to apply to periods of deflation. Reserve banks thought they were pursuing a "hands off" policy when in fact they were pursuing a powerful restrictive policy. During the days ahead when gold shortage and gold economy become imminent problems, it is necessary that we define much more clearly what constitutes a "hands off" policy, what constitutes a restrictive policy and what constitutes a stabilizing policy. The great problem of the next decade in Federal Reserve policy will be how to cope with deflation, just as the great problem of the past decade has been how to cope with inflation.

In order to compare the 1925-1927 deflation with other similar post-War price movements, it is desirable to show the general position of periods of falling prices in the post-War business cycle. Three periods of rising prices, 1919-1920, 1922-1923, 1924-1925, were consistently aligned with periods of business revival or prosperity. Two periods of falling prices, 1920-1921, 1923-1924, were aligned with business recession, but a third period, 1925-1927, was aligned with a remarkably well sustained volume of business.

The accompanying charts show certain monetary characteristics of these cyclical price swings since the great readjustment of 1920-1921. The price curve is the wholesale index of the Bureau of Labor Statistics adjusted to the average of July, 1921-June, 1927, as a base of 100. Selection of this base grows out of the assumption that for this period the long-time movement of prices is best indicated by a horizontal line. The deposits curve is net demand deposits of reporting member banks outside New York City, adjusted for sec-

ular trend.[7] Outside deposits are selected because they represent primarily the commercial supply of credit. The maximum correlation is .897 when deposits are lagged one month, but with no lag at all, it is .861, and with prices lagged one month it is .781. We have here an interesting co-variation, but we must not infer from this relation that one factor is the cause of the other. The index of permanent reserves is derived from gold stock plus United States securities owned by Federal Reserve banks. For this period the effect of currency issued or retired on permanent reserves can be ignored because the amount of currency in circulation was substantially the same at the end of the period as at the beginning.

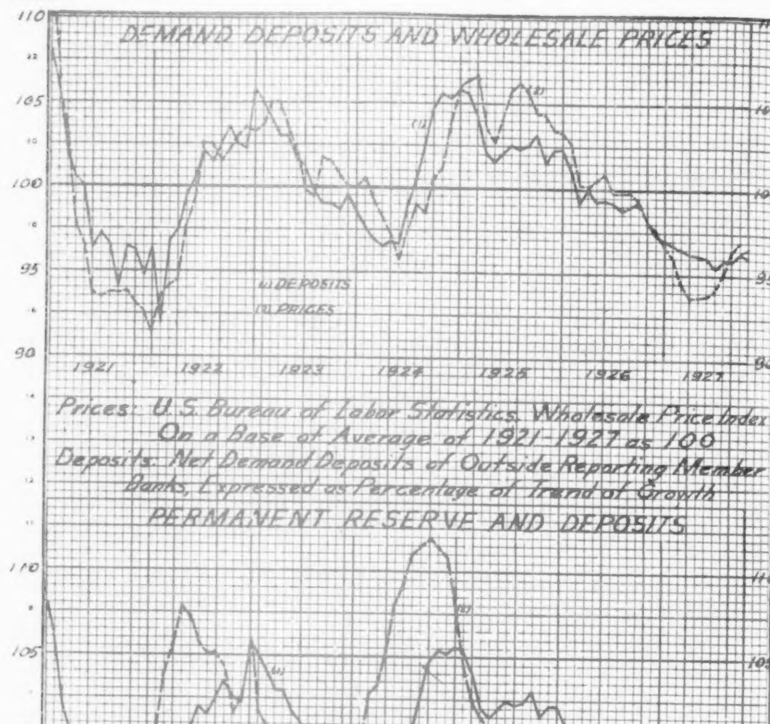
To explain adequately the relations of these three curves would require many lines of investigation. In this limited paper only one will be discussed; namely, the evolution of Federal Reserve policy in coping with the falling demand for credit during the three periods of falling prices. These three periods have played a prominent part in development of Federal Reserve policy with respect to the control of price deflations. Since it is generally recognized that deflation is much less amenable to control than inflation, we are dealing here with perhaps the most difficult phase of central bank policy.

The outstanding doctrine emerging from the first deflation, 1920-1921, was that the best way to prevent excessive deflation is to prevent excessive inflation. After a sky rocketing of prices such as that of 1919-1920, a drastic corrective in the form of a fall of prices must inevitably run its course. But after a moderate and healthy firmness of prices, the cyclical recession of prices will be equally moderate and healthy. This principle of control has been widely endorsed by economists and bankers as a cornerstone of central bank policy.

If we look over the subsequent periods of decline, we quickly discover that this principle is far from adequate. Both in 1923-1924 and 1925-1927 wholesale prices threatened to fall to extremes which showed no particular connection with the preceding periods of rising prices.

Toward the end of 1923 industrial recession became serious, a hesitant attitude prevailed among business borrowers, speculation was on a conservative basis, and in the West, bank failures, agricultural unrest, and threatened radical legislation were giving rise to alarm. In 1924 interest rates fell to about 3 per cent on commercial paper and 2 per cent on bankers acceptances and call loans. To this situation the Federal Reserve authorities applied positive control. They had discovered a year or two earlier the possibilities of open market policy. In April, 1923, they had set up an Open Market Committee and had formulated the principle "that the time, manner, character, and vol-

[7] Straight line trend of original data computed by method of least squares.


Percent
DEMAND DEPOSITS AND WHOLESALE PRICES
(1) DEPOSITS
(2) PRICES
1921
1922
1923
1924
1925
1926
1927
Prices: U.S. Bureau of Labor Statistics Wholesale Price Index On a Base of Average of 1921-1927 as 100
Deposits: Net Demand Deposits of Outside Reporting Member Banks, Expressed as Percentage of Trend of Growth
PERMANENT RESERVE AND DEPOSITS
(1) DEPOSITS
(2) RESERVE
Reserve: Gold Stock Plus U.S. Securities Owned by Federal Reserve Banks Expressed as Percentage of Trend of Growth
Deposits: Same as Above.

ume of open market investments purchased by Federal Reserve banks be governed with primary regard to the accommodation of commerce and business and to the effect of such purchases or sales on the general credit situation." Acting upon this principle, they started buying United States securities in the autumn of 1923 and within a year bought about $500,000,000 of such securities. The discount rate at the New York Bank was lowered from 4½ per cent in January, 1924, to 3 per cent in August of that year. If these steps had not been taken, then, to quote Governor Strong of the New York Bank, "Instead of having some expansion of bank credit such as has taken place, we should have had some further contraction and probably a definite further slackening of business and lowering of prices."[8] In other words, instead of adhering to the view of 1920-1921 that falling prices will not run to excess if the previous period of rising prices has been moderate, they became afraid of an extreme decline and deliberately set out to check it. Although money was already easy and the demand for additional funds was about as stale as it ever gets, nevertheless the Federal Reserve authorities proceeded by open market transactions to inject about a half billion dollars of additional money. What happened? As permanent reserves available for member banks increased, demand deposits increased, and wholesale prices promptly followed suit. Here was deliberate intervention to bring deflation to a halt. In this kind of situation, the policy of the Federal Reserve banks was a decisive influence in shaping the course of prices.

Probably such intervention would not, however, have been so effective had not certain favorable conditions attended. Chief among these were the absence of unhealthy speculation and in 1924 a sharp rise of agricultural prices reacting to the benefit of the American farmer because of good harvests at home accompanied by bad harvests abroad. In 1925-1927 these conditions were reversed. Speculation then cast such a spell of alarm over Federal Reserve policy that the officials did not venture to inject money into the situation, lest it be used in such a manner as to drive speculation to dizzy heights rather than to to buoy up the level of commodity prices. Moreover, farm prices kept on falling right through 1926 and the first half of 1927. Under these conditions, instead of applying a stimulant to demand for credit, as in 1923-1924, they refrained from open market purchases, thereby permitting the available reserves of member banks as well as demand deposits to fall below a normal rate of growth, and taking the position that the weak demand for credit was not amenable to control.

The price recession reached a turning point during approximately

[8] Hearings on the Strong Bill, 1926, Part I, p. 338. This opinion was written on December 25, 1924.

the second quarter of 1927. Between June, 1926, and June, 1927, permanent available reserves of member banks had increased about $170,000,000. This was due not to any change in securities owned by Federal Reserve banks but to gold imports and currency retired from circulation. The new reserves were promptly used as a basis for expansion of demand deposits. Farm prices reached bottom in April, industrial prices in May, and general wholesale prices in June. Simultaneously there was a new firmness in wholesale prices in nearly all foreign countries. After the turning point had very definitely been passed, the Federal Reserve authorities abandoned their fear of speculation and instituted a policy of credit expansion. Between July 29 and September 13, the discount rate at all Federal Reserve banks was reduced from 4 to 3½ per cent. At the same time United States securities were bought heavily, with the result that by the middle of November securities owned were $397,000,000 greater than a year before.

From a review of these three experiments by Federal Reserve authorities in dealing with deflation, one is impressed by the striking contrasts between successive periods of deflation. Obviously a plan of control which fits one type of deflation may not fit another type. No single formula suffices. In the first period, deflation was allowed to run its course, on the ground that the only cure for deflation is to prevent inflation. In the second period, deflation was not allowed to run its course, but the new open market policy was applied audaciously in order to bring deflation to a close. In the third period, as in the first, deflation was allowed to run its course but on entirely new grounds; namely, that there was no demand for additional funds and that if funds were injected into the market they would make speculation worse instead of making commodity prices better. When security prices and commodity prices both rise or both fall at the same time, the Reserve banks seem to be confident and definite, but when security prices leap upward at the same time that commodity prices plunge downward they are hesitant and uncertain. Such a price paradox has been outside the pale of the old familar premises of control and has resulted in a policy, ostensibly of hands off, but actually and in effect of restriction.

These illustrations show the importance of recognizing different types of deflation, of studying the shifting relation of the price-making factors from one type to another, of allowing great flexibility in central bank control of deflation, and of developing positive criteria of control when major groups of prices are moving in opposite directions.

When these varied paths of price analysis are drawn together and contemplated in their entirety we find that what is really involved is a dynamic and quantitative approach to the theory of the value of

money. Value theory in general and monetary value theory in particular stand in need of that enrichment which comes from the measurement of fluctuations in the basic process of valuation.

By this approach, conception of long and short run tendencies are reducible to more definite conceptions of types of time behavior. The general types which have here been singled out for special emphasis are long-time trend, post-War instability, and cyclical fluctuations. Each of these types calls for further subdivison of types of time behavior depending upon the purpose of the analysis. This differentiation of types of fluctuation is a preliminary step in the direction of workable hypotheses about the behavior of prices under highly dynamic circumstances.

The more advanced stages of setting up such workable hypotheses involve the use of certain concepts and certain tools of workmanship which it is well to suggest in summary form. The price-making factors are conceived as a group of variables. An initial disturbance in any one variable not only sets up a series of changes in all the others but these in turn react upon the initial disturbance. A recognition of the mutual interaction, the reciprocal connections, of all variables enables us to dispense with the cruder concept that any one factor is *the* cause or *the* effect. Having dislodged the rigid notions of causation, we are prepared to seek for the sequences and proportions of change in each given type of price fluctuation. In this process the use of wholesale indexes as a measure of the general purchasing power of money has to give way to more comprehensive indexes, although for specific purposes wholesale indexes will be of undiminished importance. Moreover, greater attention than before has to be given to internal relations of groups of prices and to dispersion of individual commodities. Finally, the changing elasticity of demand for funds from phase to phase of price fluctuation and the changing psychology of the business community in relation to injection of new funds or withdrawal of old funds are taken as usual and normal and fundamental events rather than as mere surface perturbations on the static sea of hypothetical equilibrium.

The relation of this approach to the quantity theory is difficult to state without an elaborate definition of exactly what version of that theory is intended. However, it can be stated in a general way in the words of Alfred Marshall, in testimony before the Committee on Indian Currency in 1899. Marshall said: "I hold that prices vary directly with the volume of currency if other things are equal; but other things are constantly changing. This theory has been the cause of much controversy; but it has never been seriously denied by anyone who has taken it as a whole, and has not stopped short, omitting the words, other

things being equal." It may be stated that the equation or truism, $MV = PT$, is a necessary tool of analysis when freed from the entanglements of rigid causation doctrine which have grown up around it. Can we not leave where it is the inconclusive battle of the past generation over the question, "Is M the cause of P or P the cause of M?" and pass on to new fields of positive investigation?

In adopting this kind of approach, we should be clearly aware of the ultimate objectives toward which we are trying to make progress. Such objectives, on the practical side, are the development of a more reliable and accurate technique of price forecasting, and the development of more complete and explicit criteria of price control through central bank policy. The objectives, on the side of contributions to theory, are a more adequate quantitative knowledge of the dynamic aspects of price behavior, a less controversial pure theory of value in the monetary branch of political economy, and an institutional complement to the classical laws, long-run tendencies, and causational abstractions of traditional monetary doctrine.

POST-WAR PRICE MOVEMENTS—DISCUSSION

E. W. Kemmerer.—I have read Professor Edie's paper with much interest and find myself in agreement with much of what he says. There are many points in the paper, however, concerning which I have serious doubts and, inasmuch as we profit more by discussing our differences than our agreements, I shall devote the few minutes at my disposal to one of these points; namely, to Professor Edie's apparent belief that the world's gold production will soon be so inadequate as to force upon gold standard countries of the world a long period of falling prices. He says, "barring some wholly fortuitous event, the outlook for a sustained increase in gold production is thoroughly discouraging," and his discussion concerning increased economies in the use of gold in the future yields an equally pessimistic conclusion. In such conclusions he has good support in the opinions of no less authorities on this subject than Mr. Joseph Kitchen and Professor Gustav Cassel. And yet, I have my doubts and my reasons for them I will suggest briefly; first, those relating to the supply of gold and, second, those relating to the demand.

When, as a result of the War and particularly of the War-time depreciation in the value of gold, the world's annual gold production fell off from approximately twenty-two million fine ounces in 1913 to fifteen and a half million in 1922, and the South African gold production declined from eight million eight thousand fine ounces in 1913 to seven million in 1922, we heard on every side pessimistic opinions as to the future production of gold and prophesies that it would be many years before pre-War figures of gold production would be restored, and that, at any rate, the return to these earlier high figures was highly improbable at best before the pre-War value of gold should be pretty well restored through a heavy decline in price levels. Well, gold is today worth only about two-thirds what it was worth in 1913, production costs in the best mines are actually lower than they were before the War, and the world's total gold production which by 1922 had dropped to 69 per cent of the 1913 production had risen by 1926 to 87 per cent of the 1913 figure. South African production exceeded the 1913 figure by 4 per cent in the year 1923, jumping in that one year from the lowest figure in twenty years, which marked the year 1922, to the highest figure, but one, in the history of the Rand, and every year since 1923 has registered a new high figure for the Union of South Africa, which today produces over half of the world's gold. A news item in the New York *Times*, for December 18, says that the total gold output of the Transvaal for the first eleven months of 1927 was "nine million two hundred and eighty thousand ounces, so that last year's total production of nine million nine hundred sixty-two thousand eight hundred and fifty-two ounces, which was a new high record in the history of the Rand, will certainly be exceeded this year." The London *Times* of November 30, quoting a report for the year 1926 of the largest gold producing company in South Africa, said: "The quantity of ore crushed, gold produced, and profits obtained show

large increase over previous years." A couple of years ago I visited one of the largest gold mines on the Rand where I saw gold mined at a depth of considerably over a mile, a thing which would have branded a man as a mad man if he had prophesied it a generation ago, while most of the gold was being produced from ores of grades so low that they would have been discarded in the nineties of the last century. Of the total world's gold production since 1492, about half has taken place since 1901. New gold producing areas are continually being discovered and it does not seem at all improbable that new methods may be discovered in the future that will materially reduce the costs of production and bring into use lower grade ores than are today being worked and of such ores there are enormous quantities available.

Furthermore, as in the past, any appreciation of gold by reducing the price level and, therefore, production costs, will tend to check itself by stimulating increased gold production.

Passing from the subject of the supply of gold to that of the demand for gold, the following brief observations may be made.

First, the evils of monetary instability are appreciated by the intelligent public much more than they were a few years ago, likewise the possibility and desirability of exerting strong stabilizing forces through co-operative action among the world's leading central banks and among governments. The frequent conferences we have seen mentioned in the press in recent years among the governors of the New York Federal Reserve Bank, the Bank of England, the Bank of France, the Reichsbank, and other central banks are hopeful signs. International conferences, like the Genoa Conference, dealing with this subject are likely to occur more frequently in the future under like conditions than in the past because of the existence of the League of Nations. This sort of international co-operation would probably become more powerful and effective in the future if need should arise to combat any strong tendencies toward gold appreciation.

A possible form of international co-operation in the direction of stabilizing the value of gold which has not yet been resorted to but which could probably be used in case of great need in the future, is the regulation of the flow of gold into the arts. One can imagine few things that are affected with a greater international public interest than the value of gold for monetary purposes and, on the other hand, one can imagine few things affected with a less international public interest than the principal uses for gold in the arts. Roughly speaking, something like a half of the world's gold production normally flows into non-monetary uses. Certainly the flow of gold into these uses could be materially restricted by taxes and other governmental measures, thus leaving the monetary uses a larger proportion of the total annual production than those uses now obtain under conditions of competition with the industrial uses.

Second, we may expect, I believe, contrary to the opinion of Professor Edie, a much greater development of the gold exchange standard in the future than we have had in the past. There was a considerable development of the gold exchange standard before the War, as for example, in India,

Java, the Philippines, and the Straits Settlement, and it exists today in many more countries than it did in 1913. In some of these countries, at least, it is not looked upon as a half-way house on the way to the more customary form of the gold standard. In the future the gold exchange standard is likely to be adopted particularly by smaller states and by colonies and other dependencies of larger states.

Third, there is an enormous possibility for the development of the check system in most countries of the world, aside from Anglo-Saxon countries, and the use of checks in place of bank notes is a large economizer of gold.

Fourth, and closely related to the above, in fact another phase of it, is the great economy in the use of gold that will result from increases in the rate of monetary and deposit currency's turnover or, as it is often called, in the velocity of circulation. The efficiency of monetary gold varies with the rate of turnover of the gold coin itself, when it is used in hand to hand circulation, and of the notes and deposit currencies based upon gold when the gold coin is withdrawn from active circulation and held as reserve against notes and deposits. As population becomes more dense, business more efficient, and transportation more rapid, we may reasonably expect increasing rates of monetary and deposit turnover. A gold coin that turns over, for example, twenty-four times a year, in hand to hand circulation, when placed in a 40 per cent gold reserve against bank notes of a central bank serves as the metallic basis of two and one-half times its value in notes and, as each dollar in notes will do as much money work as a gold dollar in hand to hand circulation, the gold dollar thus withdrawn from hand to hand circulation and used as the basis of note issues has its efficiency increased in the proportion of sixty to twenty-four, or two and a half times. If the same dollar in turn is taken out of the note issue reserve and put into a 35 per cent gold reserve in a central bank against deposits, and if these deposits in turn constitute on the average a 10 per cent reserve for the deposit of commercial banks, and if these commercial bank deposits in their turn have an average rate of turnover of thirty-six times a year, we have multiplied the monetary efficiency of our original hand to hand circulating gold coins about forty-three fold. The gold dollar in reserve against deposits is, roughly speaking, seventeen times as efficient as it was when held in reserve against bank notes. These figures are, of course, hypothetical, but they are based roughly upon estimates of monetary and deposit currency rates of turnover in the United States and our present legal reserve requirements for the Federal Reserve System. The tendency of the world is likely to be strongly in the direction of using the more economical media of exchange and the rates of monetary and deposit turnover are likely to increase. The increasing influence of American banking methods, particularly with reference to the use of checks, on other countries of the world is likely to lead to more rapid development in the use of deposit currency in other countries of the world in the near future than it has in the recent past.

All things considered, I am inclined to think that our anxiety concerning the future of gold might better be directed less to the danger of currency

appreciation through gold scarcity, although such a contingency is of course possible, and more to the question of what would happen to our financial structure, to the distribution of wealth and to the welfare of our educational, benevolent, and other social welfare institutions if history should again repeat itself and modern science should, despite all the wise prophesies to the contrary, perform another miracle by devising a method for making synthetic gold cheaply. When the ordinary layman is told that synthetic gold is already produced but only at extravagantly high cost, he is inclined to say, "If modern science can perform the miracle of producing synthetic gold at all, the world would do well to consider seriously ways and means for meeting the great problems that would arise if some wizard should suddenly announce to the world that he had devised a method of producing synthetic gold cheaply."

C. O. Hardy.—With a large part of Professor Edie's paper I find myself in agreement, but I am unable to follow through to some of his principal conclusions. Before taking up the points at which my interpretation differs from his, I want to emphasize one point in which I am in heartiest agreement with his method of approach; namely, his emphasis on the production of gold rather than the international movements of gold as an element in the determination of the level of world prices. I think the events of the past few years have done much to dispel the notion that shipments of gold from one country to another are important price factors, and I am very glad to note that Professor Edie practically ignores this aspect of the question.

Like Professor Kemmerer, I am more optimistic than is Professor Edie about the possibility of effecting further economies in the use of gold—if that is ground for optimism. I shall mention only one angle of the question, a point which Professor Kemmerer's modesty prevents his including in his survey; that is, the secular trend of Professor Kemmerer's own activities. If he continues to spread the gospel of the gold exchange standard until he has no more worlds to conquer, and until the gold in one country, or in three or four countries, serves as the ultimate reserve for all the rest, who knows how great may become the disparity between the gold base and the world credit superstructure?

A more serious point of disagreement between Professor Edie and myself is his emphasis on the return to the gold standard in Europe as a cause of declining prices in America. It is easy to see why the shift from a depressed paper standard to a gold standard involves a drop in the internal price level, gold prices being lower than paper all the time, but it is hard to see why this shift should cause the fall in the gold prices themselves, at home or abroad. Of course, if the return of Europe to the gold standard had been accompanied by large withdrawals of gold from America, and if such withdrawals had forced a contraction of credit in America, falling prices in America might result. But no such conditions have existed during the period under review. True, our gold stock was smaller on January 1, 1927, than it was on January 1, 1925. But the period as a whole was not

one of declining gold stocks, nor of tight money. There were very heavy exportations in the winter of 1924-1925; after that the gold stock increased until last August. From April 1, 1925, to April 1, 1927, the gold supply increased by $250,000,000; yet prices fell. I do not see, therefore, how the restoration of the gold standard in Europe can have been a cause of our price decline.

It is true, as Professor Edie points out, that import and export prices have fallen more than have our domestic prices. But an analysis of the make-up of the import and export indexes gives little support to the theory Professor Edie has presented. The export index is dominated by cotton; and I do not believe anyone would contend that the fall of the prices of cotton was brought about to any great extent by currency conditions. Crop conditions in America and the Indian monsoon are far more important factors in the price of cotton than is the ability of England to finance purchases of the cotton which, in large part, she resells in foreign markets. Likewise, with our import index. Rubber, silk, coffee, and sugar, which are the most important items in this index, are largely controlled in their price movements by conditions upon which the restoration of the gold standard in Europe has no influence.

Moreover, it must not be forgotten that both our imports and our exports are largely raw materials. Raw materials are well known to have wider price fluctuations than do manufactured goods. In times of falling prices raw material indexes go down more than do general indexes, and in boom times they rise faster. The last two years offer a fresh illustration of this well-known phenomenon.

One more point of disagreement: Professor Edie lays much stress on the fact that member bank permanent reserves have not during the last two years increased at their normal rate. This fact he explains in terms of a supposed restrictive policy of the Federal Reserve Board. It seems to me that any influence which the banks' reserve position may have on the price level must necessarily be exercised through the medium of the volume of loans. While it is true that reserves have failed to increase at their normal rate, it is noteworthy that bank loans have increased at more than their normal rate. From January 1, 1925, to July 1, 1927, bank loans increased by $2,900,000,000 and bank investments by $700,000,000. The increase of total loans and investments amounted to 12.6 per cent in thirty months, or fully the normal amount.

This curious phenomenon of rapidly rising loans and stationary reserves has been possible chiefly on account of the extraordinary growth of time deposits, which made possible a reduction in the reserve ratio of all member banks from 7.0 per cent in the opening month of 1925 to 6.4 per cent in January, 1927. The relative increase of time deposits against which only 3 per cent reserves are held, has virtually placed in the hands of banks for disposal two billion dollars of new credit without their having to resort to the use of Federal Reserve credit. Under these circumstances, it is not strange that the volume of reserves has shown little growth. There is no real evidence that the Federal Reserve Board has been holding the

banks in check. It is true that they have not forced their potential lending power into use. So far as I am aware, central banks have never done that. But they have been content to leave the utilization of their lending power, in large part, to be determined by demand conditions; and the member banks have not utilized it because the fall in their reserve requirements has rendered it unnecessary.

The immediate reason why it has been possible for this expansion of bank loans to coincide with a falling price level is found in the record of collateral loans and of bank investments, and in the movement in prices of securities. We have had plenty of credit expansion, but the credit has gone into the stock and bond market rather than into commodity speculation. Had more credit been forced into the market, there is no assurance that it would have affected commodity prices any more than has the enormous increase which actually took place. That the Federal Reserve Board refrained from forcing credit into use in the hope of inflating commodity prices is not a ground for characterizing their policy as "hesitant and uncertain"; rather it is an evidence of their intent and power to "accommodate credit and business."

ROUND TABLE DISCUSSIONS

THE RELATIONSHIP BETWEEN DEPARTMENTS OF ECONOMICS AND COLLEGIATE SCHOOLS OF BUSINESS

Ralph E. Heilman, *Chairman*

It has been felt that it would be desirable to arrange for a joint meeting of the American Association of Collegiate Schools of Business and the American Economic Association, for the purpose of discussing the many interests which are common and mutual to economists and business educators, hence this conference has been arranged to discuss these relationships.

What are some of the more important common interests and problems? Briefly, some of them may be suggested as follows: What constitutes the proper differentiation in objectives for schools of commerce and departments of economics—educational objectives and scientific objectives? What is the definite educational responsibility which rests upon each? Another problem which has given rise to difference of opinion is one which has to do with the place of the department of economics in the scheme of university organization. Should it be organized outside and independent of the school of commerce, retaining its status as a separate department in the college of arts, or should it be organized exclusively as an administrative unit within the school of commerce?

Another important problem has to do with the extent of training in economics courses which should be required before the student is permitted to begin his study of business. Is it true, as asserted by some, that the study of economics contributes little if anything to the proficiency of the business executive, and that business men really have as much to fear from economists as from legislators? Or on the other hand is it true, as is sometimes stated, that economics is to the study of business what biology is to the study of medicine? And if a thorough grounding in economics is really essential before the student should be permitted to begin his professional study of business, how extensive should this preliminary study be? If we concede the importance of economics to the study of business, there remains the question as to whether the study of economics should precede or be concurrent with the study of the applied business subjects? The latter plan, I believe, is followed in many of the institutions which offer a four-year undergraduate curriculum in business.

Some concern has been expressed regarding the effects of the development and expansion of schools of business upon departments of economics. What will be the effect upon departments of economics, upon courses in economics, upon research activities of members of the faculty, and upon instructors themselves?

Another problem of relationship, upon which clear thinking is of the utmost importance, has to do with the establishment of a line of demarcation between those courses offered in the department of economics and those offered in the school of business. True, the answer to this problem

will depend somewhat upon local and institutional considerations, relating to the teaching personnel, the budget, and similar factors. Local history and practical expediency no doubt play an important part in formulating the answer to this question in various institutions. But it is inevitable that the character and content of courses of instruction and the type of approach used in them, will depend somewhat upon the character of the administrative organization. Therefore, it is important that we should find some educationally sound and defensible principle regarding the division of courses as between the department of economics and the school of commerce. It would seem that the department of economics should present those courses which are taught from the standpoint of broad general social and public policy, and that the school of business should offer those courses in which the approach is primarily from the standpoint of private ownership, operation, and management. Is this a sound principle?

I have simply suggested some of the problems arising out of the relationships between schools of commerce and departments of economics. Many of these problems are difficult and baffling. Some of them are pressing for solution. It is our hope that informal discussion will throw much helpful light upon them.

E. L. Bogart.—The question which I have been asked to discuss is a double-barreled one, being first, a question of organization—should the department of economics be included in the college of commerce?—and, second, a question of content—what courses should a commerce student take? These may be considered in turn.

At the University of Illinois the Department of Economics is included within the College of Commerce and constitutes an important part of that College, being one of three major departments. We believe that such an arrangement is of value both to the Department and to the College. The general courses in economics are benefited by contact with more technical business courses, as the more theoretical generalizations are tested and checked by business experience. This is especially true when the different kinds of courses are given by the same men, which would be unusual on account of budgetary difficulties if the department of economics were organized outside the college of commerce. But even if one set of men gives the broader and another the more technical courses, the knowledge that the theories of the former group will shortly be subjected to practical test in the latter has a healthful restraining influence. The students in the college of commerce, too, are inclined to give a more respectful hearing to the teachings of social economics if these bear the hall-mark of approval by being included in the college. It may be that there is a corresponding loss in the case of students outside the college, although this can be only a guess. Which one of us has not heard the slurring remark that truly cultural courses are not to be found in the college of commerce any more than they are in engineering or agriculture? But this brings me to a consideration of the advantages to the college of having the department of economics organized within the college and of constituting an integral part of it.

The first and slightest advantage is that such an organization attracts more students to the college. Stripped of the courses in economics the college of commerce seems to some of the students to offer only dry husks without much cultural value.

Another minor advantage is the greater ease of organization. It is not always easy to distinguish between social economics and private economics, between courses given to make better citizens and those to make more efficient workers. The distinction is not between broad and specialized courses, for a course in general social economics may be highly specialized as one on the economic history of the industrial revolution or on the theory of profits. The distinction is rather between points of view, between the social and the private approach. And yet, I doubt whether many of our courses in business have been as highly professionalized as those in the colleges of engineering or agriculture or law. The teaching personnel, the textbooks, and the point of view of our colleges of commerce, even in their most technical courses, are still affected by the circumstances of their birth and training in the old departments of economics. Since this is so, it is not easy to draw the line sharply between courses which should be detached from the department of economics and included in the college of commerce when these two are separated. Such an unfortunate separation is avoided so long as the department of economics is included within the college of commerce. Conflicts of interest and of jurisdiction are thus prevented.

Such inclusion, moreover, reacts favorably upon the college of commerce itself. There is danger that the teacher of a technical and professional course may overemphasize its importance or condone successful but unsocial methods in business practice. The proximity and perhaps the criticism of more general courses is frequently valuable in leading to a better realization of the place which a particular calling holds in the business world, and to a clearer recognition of its social significance and implications. With the growing specialization and division of fields of knowledge into smaller and smaller fragments there is constant danger of missing the larger view of a university education and of substituting for it mere formal proficiency in some art or the accumulation of facts.

The final advantage which I see in the inclusion of the department of economics in the college of commerce is the emphasis which is thereby given to the training of leaders rather than turning out mere technicians. I believe that the inclusion of numerous courses in general economics constitutes the best basis for successful leadership in business.

In arguing for the inclusion of the department of economics in the college of commerce, I hope I have not pushed the argument too far, and made it appear that no students could, or would be apt to, elect economics courses unless they were enrolled in the college of commerce. Nothing is farther from my thought. I mean to say only that, since commerce students especially need economics courses, these should be listed and administered in that college. But such courses would be open to all students in the university who satisfy the prerequisites. The department of economics, like those of mathematics or modern language, is and should be a

service department, ready to offer any economics course which is required by any college on the campus, and to receive into its general courses all qualified university students irrespective of their registration in any particular college. Its courses might well be, and more frequently are, listed simultaneously in the announcements of two or more colleges.

Thus far, I have been dealing largely in generalities. Let me now describe somewhat more concretely the organization of the four-year curriculum in commerce at the University of Illinois, and the place which the Department of Economics occupies in this scheme. Roughly, about half of the work taken by a commerce student is taken within the college, and somewhat less than half of this is taken in the Department of Economics. It is probably true that certain courses, like investments, insurance, and personnel management, which at Illinois are given by the Department of Economics, would be listed as pure commerce courses in other institutions with a different organization. It has been our experience that the four-year curriculum, with accountancy and freshman economics the first year, makes an early appeal to the student's career motive, and probably leads more students to register in the College of Commerce than otherwise would. We thus carry our full share during the first two years of the vast numbers who are experimenting with college life and who drop out before finishing. By the time he reaches junior year the student who survives has had the basic courses in economics, and also accountancy and business organization.

In outlining this subject for discussion Dean Heilman raised this question, "Does this organization of the work exaggerate in the student's mind the importance of 'bread and butter' subjects and lessen his interest in broader economic courses?" Based on our experience at Illinois my answer to this question would be in the negative. The real specialization and the election of technical "bread and butter" courses begin practically with the junior year, but during the last two years the general economics courses are about as widely elected as the more technical ones. About two-thirds of our commerce students take the somewhat undifferentiated "general business" curriculum, which seems to indicate either that they have not made up their minds as to their precise careers or that they consider a general course the best preparation for business. Among the specialized curricula the largest elections take place in accounting and banking. In those business occupations whose technique has been reduced to definite and well-understood principles which can be taught and practised students elect the courses giving the instruction they need.

One final question may be raised and answered: "Is it advantageous that the student should carry his courses in economics simultaneously and concurrently with specialized business subjects throughout a four-year program rather than concentrate them in the first two (or three) years of college work as a prerequisite to commerce courses?" From our experience at Illinois we should answer this in the affirmative. The students are requested to complete in the first two years certain elementary educational requirements, such as rhetoric, science, foreign language, etc., but in general, their courses are graded according to difficulty and not merely by subject matter.

To put all the general economics courses in the first two years and all the technical commerce courses in the last two would be to forsake this order, for some of the commerce courses may properly and advantageously be given in the earlier years and some of the economics courses may profitably be deferred until the later years. It seems to us, therefore, that the student will get better results if he drives these courses abreast rather than in tandem fashion.

There is, of course, no antagonism in the methods or purposes of the department of economics and the college of commerce. Whether the department will function better and more adequately serve the educational needs of the students in or out of the college will probably depend somewhat upon historical and local conditions and perhaps upon the kind of organization. A system which works well in one place cannot always be transplanted without change to another. Like an organism, an educational organization must adapt itself to its environment. For the University of Illinois, I believe that our College of Commerce, in which is included the Department of Economics, with its four-year commerce curriculum yields satisfactory results.

William H. Kiekhofer.—In order that you may the more easily criticise what I am going to say, I shall put my ideas into the form of a series of propositions.

The first proposition that I advance is this: the curriculum of the school of commerce should be based upon a minimum of two years of liberal arts work. I should put the minimum a good deal higher than this were it not for the reorganization of secondary and collegiate education which is now in progress. As we all know the junior high school and junior college movements are sweeping the country. I am one of those who believes that by beginning secondary education with the seventh grade and continuing it to the end of the sophomore year in college, it will be possible to effect a saving in time of approximately two years for liberal education.

I should put the minimum higher than the two years just suggested were it not for the fact that from 40 to 50 per cent of the juniors in many of our four-year courses are transfers from other institutions. Accordingly, it will be much easier to build on top of two years of liberal arts work than to impose a higher requirement.

I should put the requirement higher than two years were it not for the further reason that liberal education (by which I mean for present purposes non-professional education) need not and should not cease upon a student's entering the professional school.

My second proposition is this: in the liberal arts curriculum economics is the bedrock upon which to erect the foundations of the school of commerce.

What biology is to medicine and what physics is to engineering, economics is to commerce. The study of economics is most valuable as a means of self-discovery for the student contemplating preparing for business. Many students of economics have no thought of ever going into business, but

certainly no one who fails to be interested in and to master his economics can very well look forward to being a highly successful business executive or business expert. The preliminary economics training is a good means of sifting and classifying students.

I am very far from saying that business or commerce is merely applied economics. Business and commerce, of course, represent applications of a good many other sciences, such as psychology or physics.

Today, almost every large bank and investment house has an economist on its staff, whether they happen to call him that or by some other name. Many large corporations, as we all know, have economic staffs engaged in business research similar to the scientific researches of the technical departments.

Now, if it be true that economics is fundamental to commerce and that commerce is one of the most productive of several concrete applications of economics, then my third proposition follows; namely, the department of economics and the school of commerce should always work in sympathetic co-operation though recognizing that their educational responsibilities and objectives are not identical. The great problem is how to secure unity without loss of identity.

This being the most important of the propositions that I want to advance, I am going to develop it very briefly by means of three corollaries. My first corollary is this: Economics should not be a department organized entirely within the school of commerce any more than commerce should be a mere appendage to the department of economics. The department of economics has other aspects and objectives than commerce. Commerce, too, has other bases than the economic basis. While there should be separateness for the accomplishment of the dissimilar objectives of the two, there must always be sympathetic co-operation between them.

It has often seemed to me in contemplating a good deal of the waste and inefficiency, the misunderstanding and petty bickerings that sometimes exist among men in university life, that we might gain a good deal if we had in our universities no more departments than there are distinct branches of human learning. I like to think of a department in terms of a guild of working scholars, or if you prefer a modern analogy, in terms of an operating company. In a sense, the department of economics of a university, including all men and women engaged in economic studies and their applications to life, constitutes an operating company. The property interests in this operating company may be held by a good many different administrative units. The department of economics is related to the college of liberal arts, to the graduate school, to the school of commerce, to the school of engineering, to the school of agriculture, and in some institutions to still other administrative units. Let men have allegiance to whatever administrative unit they happen to be affiliated with, but bring them all together into one organization for the purpose of a sympathetic understanding of one another's problems and the inevitable stimulus that comes through constant association.

My second corollary is this: The work of those members of the depart-

ment of economics in the college of liberal arts, and of those whose work lies in the school of commerce, should be differentiated on some educationally defensible principle.

Finally, I offer as a third corollary this statement: The department of economics and the school of commerce should have separate leadership. There may be unusual local situations in which a departure from this principle is justified. Occasionally nothing else can be done than to entrust both leaderships to one individual. Sometimes there is a man in the faculty who has such a genius for administrative work that it is good policy to enlist his services for both tasks, but I believe that the objectives and educational responsibilities of the liberal arts department of economics and the school of commerce are so different that it is usually exceedingly hazardous to entrust leadership in the two enterprises to the same individual. On logical grounds, therefore, I favor a separation of these functions.

C. O. Ruggles.—In attempting to answer Dean Heilman's first question (namely, what is the function of our schools of business) it will be well to direct attention toward certain phases of education in this country before schools of business were created. One of the earliest of our professional schools to give attention to the education of business men was the school of engineering. Some statement of the character of the curricula of these schools may throw some light on the type of courses which should be offered by our schools of business.

The second war with Great Britain sharply directed the attention of young America toward technical education, and within a short time we had an important technical school in the Rensselaer Polytechnic Institute, which was organized in 1824. At first this school gave a one-year course. By the middle thirties, however, the development of American railways brought the organization of a three-year course in this institution in civil engineering. The need for technical training is further indicated in the organization at Harvard of the Lawrence Scientific School in 1847 and of the Sheffield Scientific School at Yale in the same year. About the same time courses in civil engineering were offered at the University of Michigan.

While plans were under way for the organization of the Massachusetts Institute of Technology before the Civil War, that institution did not get under way until the year 1865.

The name of the University of Illinois at the time the institution was organized was the Illinois Industrial University, and it was not changed to its present title until the year 1885.

The emphasis in all of these and other engineering schools was on the technical processes of production. This was the proper emphasis at that time. There was much need for greater skill in production. Even the early agricultural colleges created under the Morrill Act needed to place much emphasis on production. There was urgent need for improvement in grain crops and for better live stock on our farms. However, the success of these technical schools created a new problem. We succeeded so

well in the technical processes of production that soon many new problems in marketing, administration, in finance, labor relations, etc., were created which in turn brought about the need for the organization of schools of business.

In attempting to determine the type of training which a school of business should give, light may be thrown on this problem, as has been suggested, by examination of the curricula in engineering.

In the beginning, engineering curricula were much more technical than they are at the present time. It is interesting to observe that the Committee on Co-ordination and Co-operation of the Society for the Promotion of Engineering Education has reported that even in the field of engineering somewhat less emphasis should be placed on highly specialized engineering courses in order to make room for courses in economics and the social sciences. This committee reports that 82 per cent of the engineering colleges of the country require students to take a year's course in economics. One of the committees of this society, reporting about ten years ago, stated that it believed that no more than three hours for one semester should be given to economics, in light of the amount of work which the student should take in engineering. More recently, however, a committee has taken the attitude of including a larger amount of economics and even of the other social sciences in the engineering curricula.

If the engineering colleges are finding that they have made a mistake in consuming too much of the students' time in technical engineering, and that more time should be given to the study of courses in economics, is it not probable that the younger schools of business may go through the same cycle? Moreover, the engineers are now beginning to believe that even the technical engineering courses themselves should be shot through and through with fundamental economics, and there is a program under way under the leadership of the Society for the Promotion of Engineering Education to bring this about.

Examination of legal education shows precisely the same tendency. Our law schools centered all their attention for many years on the professional courses in law. They did not bother themselves with pre-legal education. Now there are indications that this phase of the training of lawyers will receive much attention in the future. The study of legal education, which has been carried on since 1913 through the Carnegie Foundation for the Advancement of Teaching by Dr. Reed, shows that in 1922-1923 there were thirty-five law schools that were either requiring or recommending that students take courses in economics or the social sciences in their pre-legal education. Another development which shows the interest of law faculties in economics is the extent to which this subject is being required in various arts-law or commerce-law curricula. Finally, a few of the best schools of law are attempting to develop the economic issues within the professional law courses themselves in precisely the same manner which it is proposed that the content of engineering courses be revamped.

It would seem, therefore, if these older technical and professional schools have found it desirable to limit instruction in the technical and professional

phases of their curricula in order to make room for the subject of economics, in the hope that their graduates may have a clearer perspective of the problems which they will confront, it is probable that the schools of business would do well to profit by the history of these older schools, and not depart too far from the field of fundamental economics in setting up curricula in our schools of business.

It is probable that the schools of commerce which will have the greatest success, will be those which offer a group of courses which enable their graduates to think intelligently about fundamental principles which are more or less common to all lines of business and which also give their graduates effective "tool" courses, such as accounting and statistics, which will enable them to attack a business problem in an intelligent manner. Much of the technique of business can be more readily learned on the job itself, and unless such technique is vital in finding one's way into the fundamental principles involved, it is a question whether it has any place in the curricula.

In attempting to answer Dean Heilman's second query (what will be the effect upon the department of economics of the growth of schools of commerce), it may be said that if the foregoing reasoning is sound, it would not appear that the development of work of the colleges of commerce will weaken the department of economics. On the contrary, these departments should be strengthened thereby. If colleges of commerce are properly equipped for their work, they will be carrying on research in various fields which involve many fundamental economic problems. The close contact of those teaching the courses in economics with those who are investigating business problems will help the economist to obtain certain information about the economic order which he might not otherwise obtain.

More than a score of our schools of commerce now have bureaus of business research. Through these bureaus many valuable researches of vital interest to the economist are being carried on. In the due course of time, it will be possible even for the tax-supported institutions to carry on research which belongs in what is called economics, rather than in business. Business men who have been enthusiastic in supporting bureaus of business research will gradually learn that the long-run solution of many of their problems involves much research in the field of economics. It would seem, therefore, that the science of economics will doubtless gain through application of the scientific method of attack in the study of economic problems. The new schools of commerce have found it comparatively easy to secure funds for so-called business research. The administrative officers of these schools will gradually make some of these funds available to economists who will thus be materially aided in the study of fundamental economics. This arrangement should be carried out whether the department of economics is in the college of arts or in the college of commerce. We ought to be able to center our attention on the solution of problems rather than on college organizations. Whatever the organization of the departments within the colleges may be, most research in business involves research in fundamental economics—and vice versa. And while in some instances the new toy of business research may receive most of the attention and absorb

most of the funds, there will be in time a return to a more sane and well-balanced program of having those in economics and business work in close co-ordination in research in these fields.

George W. Dowrie.—I dare say the relationship between the work in economics and that in business administration in most institutions has been the product of a local situation rather than the result of a careful formulation of educational policy.

From the standpoint of the commerce or pre-commerce student, the courses in economics have a twofold purpose. In the first place, as a citizen and an intelligent, well-disposed member of society, he needs to acquire a familiarity with economic institutions and the laws governing their functioning. Secondly, the general course in the principles, as well as those in the major subdivisions of the field, have a semiprofessional function to perform for the student of business. For example, it is more or less futile to study the financial aspects of business management without a background in the economics of money, banks and other financial institutions. Likewise, a commerce course in personnel management is greatly enriched by a preliminary course covering the social and economic aspects of labor. Instruction in railway traffic and operation would seem to me to be very parrot-like in its ineffectiveness if it were not built upon a thorough foundation in the economics of railway transportation. And so we could go right down the list of courses in the business curriculum, indicating a similar foundation-superstructure relationship with certain subjects in economics. A student with such a foundation is bound to have not only a larger, more ambitious conception of his job, but will be far less liable to think in terms of his own selfish interests.

As for the relationship of school of business faculty, students, and courses to those in economics, considered from an administrative standpoint, I must confess to a change of heart. When we were working out this problem some eight or nine years ago, at Minnesota, I was obsessed with the idea of scrambling the two together. It seemed to me that a commerce faculty separated from the men and courses in economics would be inclined to develop a trade school complex and their courses would be lacking with respect both to spirit and content. On the other hand, I believed that the economics teachers in the group would be encouraged by their association with the teachers of the more practical work to come down out of the clouds of abstract speculation and to tie in their theories with the affairs of the world about them. It is exceedingly difficult to determine to what extent this assumption has been supported by the results, but no one familiar with the situation can gainsay the fact that the contact of the two groups of teachers has been to their mutual advantage. However, it is my conviction that whatever gain was achieved was more than offset by the general spirit that "what is everybody's business is nobody's." If we had organized within the college a department of economics under vigorous leadership and the economics professors, with perhaps a very few exceptions, had allied themselves exclusively with that work, both the undergraduate instruction in

economics and the graduate teaching and research would have made more marked and satisfactory progress. Conversely, the many problems of business education would have been dealt with far more effectively had the group of men whose training and interest designated them for this department of the college been free to devote themselves entirely to its development. I am not in favor of the complete segregation of commerce and economics if it can be avoided, for there is apt to grow up an unwholesome rivalry, competition for students and appropriations, duplication of border-line courses, and a general lack of co-operation and mutual respect. It is perfectly possible to departmentalize for purposes of developing the two divisions and to care for the special interests of each, and yet to attack the common problems of the two groups as a united faculty. I feel sure that much of what we hoped to accomplish at Minnesota through the medium of a non-departmentalized staff could be achieved through occasional general faculty meetings. Even though the department of economics is on the budget of the liberal arts college, such co-operation between economics and business is equally desirable.

Commerce students quite uniformly deplore the lack of solidarity and professional spirit which characterize the student bodies of our typical undergraduate schools of business. Seldom do we see the same *esprit de corps,* the same pride in achievement or seriousness of purpose as is found in our colleges of law and medicine. The reasons for this are various and entirely outside the boundaries of this discussion, except for one contributing cause, viz., the scrambling of instructors and students in economics and commerce. Institutions which readily set up classes in economics for engineering or agricultural or home economics students and try their best to adapt the illustrative material to the students' objective, will herd together indiscriminately commerce students and prospective theologians, budding historians and social workers. No doubt the influence is broadening, but nothing will do more to destroy all efforts to build up a genuine professional spirit and interest. We have all had the experience of recommending to one of our students that he improve his deficiencies in expression by taking a vigorous course in English composition, only to find that he had been placed in a section of a rhetoric instructor whose "long suit" was composing daily sonnets to the "little birdie." A somewhat comparable air of impracticality can be found in many classes in economics. I deplore as much as anyone the commercialization or vocationalization of everything in the business students' program, but there need be no conflict between the objectives of social-mindedness and applicability of the course content to the everyday business of living and making a living.

Your chairman has asked me to consider the advantages and disadvantages of the arrangement whereby a faculty member may be a professor in both the college of liberal arts and the college of commerce. No man can devote more than a limited amount of time to extra classroom activities, such as advisory work, committee assignments, and staff meetings, without getting into a rut so far as his scholarship and teaching efficiency are concerned. He will tend, therefore, to consider one of his two faculty memberships as

more or less nominal and will be disposed to participate in the affairs of that college only when some problem of vital interest to his department is under consideration.

If his dual membership entails more than this, too great a price is being exacted from the individual affected. Economics is always one of the important departments in the college of liberal arts, and it is to the interest of both the college and the work in economics that there be adequate representation from that field, but one or more peculiarly fitted members from economics should bear the brunt of the burden entailed and should not be expected to assume any heavy responsibility in the commerce faculty.

In a two-year graduate school, like those of Harvard and Stanford, students enter from widely scattered colleges of arts or engineering. Eighteen months is little enough time in which to attempt to imbibe the spirit and method of modern business administration. Accordingly, we strongly recommend to undergraduates who are planning their programs with reference to entering the graduate school of business to include in them a generous portion of economics. We do not, however, and probably never shall deny admission to young men and women of outstanding ability, even though they may not have had a day's formal instruction in economics. But we expect our students to utilize a part of the first year in supplementing their undergraduate training by taking such work in economics, statistics, psychology, or other fields as each person's needs seem to indicate. Excellent as is the undergraduate instruction in these departments we find it desirable, from the standpoint of time consumed, emphasis, and professional spirit, to have these supplementary courses given by our own faculty, exclusively for business students. Certain members of the faculties of economics, law, engineering, and economists from the staff of the Food Research Institute have been designated as members of the faculty of the School of Business, but they offer no instruction in the School. This may look like "window dressing," but I assure you it has a more legitimate purpose. The selections are made because of the deep interest the persons in question have in the problems of business education. They are not burdened with the intimate day-to-day affairs of the School, but at our regular, but not frequent, dinner conferences, they join with us in the consideration of major educational problems and contribute a refreshing variety of points of view. A recently organized "Shop Club" brings together several times during the year the food research, economics, and business groups. I feel sure that the particular slant from which each group attacks the problem under discussion will prove very helpful and stimulating to us all.

ECONOMIC HISTORY

Abbott P. Usher, *Chairman*

E. H. Byrne read a paper on some aspects of Genoese shipping which will appear elsewhere presently as part of a comprehensive study of the subject as a whole.

WITT BOWDEN.—In English policy, the principle of monopoly was from the first the dominant factor in the control of inventions. Under the Tudors and the Stuarts, monopoly rights were extended also to innumerable individuals, who were given powers connected with the making, selling, importing and exporting of all sorts of commodities, and even connected with the administrative work of government, as the dispensing of licenses for violating certain laws. These monopolies called down upon Elizabeth and James I the wrath of parliament and led to the enactment in 1624 of the basic Statute of Monopolies. This law did not interfere with grants of monopoly in the charters of the commercial companies, but in the case of individuals and their rights in England, the law confined the grant of monopolistic rights to "the sole working or making of any manner of new manufactures," the "true and first inventor" being allowed letters patent for fourteen years.

Opposition developed, in the late Eighteenth Century, even to this limited policy of granting letters patent of invention. Manufacturers were extremely hostile to patents. They proposed as a substitute for patents the policy of governmental and private subsidies. But the patent system survived as the basic mode of rewarding inventors and of controlling, within England, the use of inventions.

The English patent system was later adopted by other countries. Englishmen had virtually no protection in the law and policy of nations. Even before the time of the epochal inventions, many Englishmen were keenly aware of the competitive value of improved technique. One writer in 1772 urged that machines, if adopted in England, might "starve the rival workmen" of other countries, but this, he asserted, was better than for England to allow other countries, by a similar method, to take away her trade and thus to starve the workers of England.

Englishmen had borrowed (or stolen) many important technical improvements from Continentals (as Lombe's famous silk-spinning machinery at Derby), and on the basis of foreign skill had built up their own superiority in technique. It was feared that foreigners, if unhindered, would return the compliment by borrowing from, and perhaps at length again excelling, Englishmen.

In consequence, a series of laws was passed to monopolize inventions for Englishmen. The earliest of these laws was enacted in 1695 to prevent the exportation of the loom known as the stocking frame. The machinery for spinning silk, although stolen from the Italians in the early Eighteenth Century by John and Thomas Lombe, became in 1750 the subject of a similar law. This law also applied to devices used in woolen as well as silk manufacturing; and it not only prohibited the exportation of tools or machinery, it also forbade workers in these industries from leaving the country. At later dates (1774-1795) other laws were enacted applying to tools and machinery and workmen in other textile industries and in the metal-working trades. In addition, it was provided that sketches, miniature models, and specifications could not be sent out of the country. In summary, these laws prohibited: (1) the exportation of tools or machinery; (2) the exportation

of technical data, as models, drawings, or specifications; and (3) the emigration of workers who might take with them and apply elsewhere their technical knowledge.

The manufacturers had been responsible for the making of these laws. In addition to their efforts to enforce the laws, they resorted to various other expedients. Individual manufacturers were extremely cautious in admitting visitors and frequently kept their plants locked and under guard.

When we recall the subterfuges to which Englishmen themselves had resorted in earlier times of their inferiority in technical skill to secure knowledge of foreign inventions and processes, it is hardly surprising that they were in turn suspicious of foreigners.

It will be recalled that Samuel Slater, sometimes eulogized as the father of American manufacturing, was an English emigrant. Arthur Young and other travelers on the Continent came back with pathetic tales of how Englishmen were being imitated and even surpassed by foreigners who had surreptitiously secured English inventions.

Beginning about 1825, we find them modifying their restrictive policies. Thus in 1825 the laws prohibiting the emigration of artisans were repealed. In 1825, and again in 1841, select committees of parliament offered reports on the laws concerning the exportation of machinery. The first breach in these laws was by means of a system of licenses; but at length the laws themselves were repealed. This was due in part to a realization of the futility of efforts to keep foreigners from copying English machinery. It was due in part to the pressure brought to bear by the machine-making industries, which desired access to foreign as well as home markets. And finally, the general policy of free trade, then being introduced, called for such action.

Other countries were beginning to recognize the importance of the new technique and were developing patent systems resembling that of England. These earlier laws were generally far from liberal in the rights accorded to aliens. It has been said, apparently with accuracy, that the patent laws of the United States have generally been more liberal in this respect than the laws of most of the other countries, but the American patent law of 1793 barred aliens. In 1800 a provision was adopted by which an alien residing in the United States two years and taking oath as to his intention to become a citizen could secure a patent under the same conditions as a citizen. After 1836, aliens as such could secure patents, but the fee, in the case of a Britisher, was $500, and in case of any other alien, $300, whereas a citizen paid a fee of only $30. In 1861 a relatively liberal law was enacted eliminating all discriminations against aliens except where Americans were not put on an equality with citizens by foreign governments.

Gradually the various states of Europe and America formulated patent systems based commonly upon the principles of the English Statute of Monopolies of 1624; and by modifications of these laws, the rights of foreigners came by degrees to be recognized.

But national patent laws varied indefinitely in procedure and in the degree of liberality accorded to aliens. These chaotic conditions led to an international conference and the organization in 1883 of an International Union

for the Protection of Industrial Property. Each member of the Union agreed to extend to citizens of all other members the rights which it granted to its own citizens. An International Bureau for the Protection of Industrial Property, located in Switzerland, exercised advisory functions of value.

But the system laboriously built up before the World War fell in ruins during the war. Monopoly rights in technical devices and processes arose historically out of the belief that the originator of something new and at the same time useful should be rewarded and thereby encouraged.

There is now serious need of a scientific re-examination of the appropriate boundary line between public and private rights in respect to inventions and rewards.

Without attempting to say what ought or ought not to be done in regard to the international control of inventions, I wish merely to play the rôle of a historian by recalling an interesting Eighteenth Century suggestion. This suggestion was labeled by its author, Sir John Sinclair, President of the Board of Agriculture, a "Plan of Agreement, among the Powers of Europe and the United States of America, for the purpose of rewarding discoveries of general benefit to Society." His plan, published in 1795, called for an international organization with extensive powers and with resources furnished by the participating nations. Its purposes were to reward inventors and discoverers on the basis of expert appraisal of their efforts, and to facilitate the free use of all technical improvements by all peoples throughout the world, in opposition to individual and national monopoly of the means of progress. Sinclair hoped that his plan, if adopted, would be a part of a system of international co-operation and good will, swallowing up the prevailing intrigue and discord. The rulers of nations might in consequence be able to boast, so he hoped, not of fleets and armies and conquest, but of the blessings of peace and prosperity without parallel in history.

The suggestion of Sir John Sinclair fell on deaf ears then, and similar ideas are ignored or ridiculed by present-day idolators of the *status quo*. But the fact remains that the monopolistic patent system has failed alike as an adequate and equitable mode of rewarding the labors of inventors and scientists, and as a basis for international relations as affected by the progress of industrial technique.

M. M. Knight.—With only two university chairs in economic history in France, it is obvious from the mass of excellent work turned out that a great many scholars not technically in that field must be devoting productive energy to it. When we try to account for the striking contrasts between the French and American situations—in finished product, organization, and even aims—we immediately find ourselves looking beyond the narrow professional boundaries of the subject.

One point I wish to make perfectly clear. Economic history is considered a branch of history rather than of economics in France.

There is nothing in a French university very similar to our "departments" of economics, with their conventional courses in theory, history, etc., and often some affiliation with a school of business. The standard arrangement

in France is for the courses in economics to be given in the faculty of law. To be eligible for one of these chairs, a man must have done practically all the work for two doctorates, one in law and one in "economic science."

This group is administratively detached from economic history in the universities, except for the history of doctrines, where the object itself is contributed by formal economics.

At the University of Paris, for example, the one chair of economic history, held by Professor Hauser, is in the faculty of letters—or liberal arts, as we would say—not in the law school with economics. Professor Hauser was himself trained as a historian, taught and wrote political as well as economic history in provincial universities for many years, and turned out much of his best work during that period. Professor Henri See, the outstanding productive scholar in economic history just now, held the chair of modern history at Rennes up to his retirement from active teaching in 1914, and was never academically classified under the subject which owes him so much.

What is true of one university applies pretty strictly to another, as they are all State institutions, under the same Ministry. Furthermore, the Rector of each "Academy," as the districts are called, is at the head of secondary and primary as well as higher education. The uniformity of the instruction at these more elementary levels is famous. It is reflected in the universities at the top in one way which is so vital to an understanding of the subject I have been asked to present that I venture to discuss it briefly.

In America, it is a sort of tradition that a teacher who spends some years in secondary schools stays there. It is even hard for him to get a university job. In France, on the contrary, it is the usual thing for a man who wants a university teaching career to begin in a lycée. At the bottom of this situation is the extremely small number of professorships and the severe competition for them.

This brings me to the setting of what I consider the outstanding merit of the French work in economic history. History and geography are taught by the same people in French lycées. They are paired in the competitive examination for professors known as the *agregation*, and thus necessarily in the university preparation for it. Every historian is also a geographer, and every geographer has a sound preparation for handling the historical aspects of his problems. The happy marriage of these two subjects was merely one of placid convenience until the appearance of Paul Vidal de la Blache, first of the Ecole Normale and later of the Sorbonne. Up to about forty years ago, geography had been backward in France, as compared, for example, with Germany. Much of the scattered work of scientific merit had been done by outsiders, including geologists, engineers, and army officers.

Vidal de la Blache, a specialist in Greek archeology, had his attention called to the tremendous possibilities of this scientific basis and check for history in the course of an expedition to the islands of the Ægean Sea. Aided by the association of geography and history in French curricula, he and his pupils proceeded to turn the former into an exact science without divorcing the two. Human geography, as this branch is now called, is largely the creation of Vidal de la Blache, his collaborators and pupils, and

the pupils of all of them. It is a physical and biological science as to method, but distinguished from both physical- and bio-geography by its aims. That is, it grew up as the servant of history. Now both are mature and serve each other.

From the standpoint of economic history, there is a distinction between the French and German schools of geography suggested by the names of Vidal de la Blache and Ratzel. This difference may have been overestimated by the French scholars who have mentioned it to me. Frenchmen seem generally to regard the German work as too strictly geographical, and inclined to be careless, clumsy, or even hard-headed in dealing with historical fact. It is one thing to be scientifically critical as to what is possible in a given environment; but it is quite another to formulate a doctrine as to what *must* have occurred without an openminded and skillful examination of the evidence as to what *did* happen. As Kipling put it:

"Oh, what avails the classic bent
And what the chosen word
Against the uncultured incident
That actually occurred?"

Scientific hypotheses, no matter how carefully constructed, are as helpless as "chosen words" against those "uncultured incidents" of which we have proof. When a theory, or even that higher form of one sometimes called a "law," clashes with undoubted reality, the latter will finally prevail and the former will have to adjust itself. I will come back to this later in connection with the French "historical synthesis" movement, which is another source of economic history, and from which, it seems to me, the so-called "new history" in this country could learn a good deal.

When a French geographer-historian mentions "economic stages," he does not refer to any abstract sociological doctrine concerning what must have happened to the human race as a whole during a half-million years regardless of basic conditions such as climate, soils, and the cost of transport. He is always dealing with what actually did occur, in a given environment. After all, the Germans of our generation are hardly less reasonable. I have called the attention of a number of Frenchmen to Müller-Lyer's book on the economic "phases" (as he calls them), a work which seemed to be practically unknown in France.

History may be a science in so far as its phenomena rest directly upon climate, soils, topography as affecting the cost of exploitation and transport, and other measurable physical or biological factors. This scientific basis as a whole is called human geography. It is not a very descriptive title. "Human ecology" would be better. History would be half a science if we could accurately measure the resistance of each environment to the one species, man, with which history is directly concerned. The least we can do with the complex and more or less imponderable factors which form the other half of the picture—that is, man's organized pressure against these environmental resistances—is to use the utmost rigor, science, and integrity in our method of getting at what actually occurred.

By a historian, economic or otherwise, the French mean a person who has had sound training and considerable practice in weighing these records of all kinds and values, getting as near reality as possible, and knowing about how near that is in each case. An exact knowledge of the particular environment furnishes an element of certainty which might be compared to the horizon in reckoning positions at sea. There is so much else in each case which is not quite certain.

History and geography are thus the great workshops of economic history in France. That, in two cases, historians occupy chairs bearing the title "economic history" is incidental. Geography and history are so closely linked that a scholar in either is a hyphen—a geographic-historian or a historical-geographer.

Sociology is not now an important source of economic history in France. In the early days of the *Revue de la Synthese Historique,* a large percentage of the contributions came from sociologists and philosophers. Henri Berr himself belongs to the latter group by training. As time went on, it was found that the things which passed muster with the critical readers were mainly those of men who were working with original materials—trying to find out something really new rather than to rearrange the generalizations of others. As Professor Hauser expressed it, synthesis seems to be more successful when carried out by those who have had some intimate contact with what they are trying to synthesize. The French "historical synthesis" movement is now largely in the hands of real historians, and it makes a genuine contribution to economic history, but this contribution is hardly a "sociological" one. I suggest, not without hesitation, that "synthetic history" has partially absorbed sociology in France.

We all want as much synthesis as is safe. It seems obvious to the French school that the best way to combine breadth with safety in historical generalization is to make sure of the measurable factors; that is, the geographic ones. Thus it becomes possible to establish standards of comparison, and to know whether an observation of one region or locality is likely to hold good for another. Of course this is only preliminary to the main and peculiar task of history, which is to find out what really did occur.

N. S. B. Gras.—The problems of business history are as difficult as they are fascinating. Among the many is the relation to economic history. The latter subject includes some topics, notably domestic economy, which business history can hardly go far in developing. Business history puts emphasis upon private business men and firms, which economic history can hardly do. And business history must, I suppose, deal with a money economy, at least very largely, while, of course, economic history can go far beyond that into the remote past.

Perhaps the chief problem at present is not the content, but the facts of business history. How are we to uncover the facts of business experience, including its forms and practices, and the forces at work? The answer is: By storing up and studying such private records as still exist. The Business Historical Society, established about three years ago in Boston, is collecting

old account books, correspondence, bills and receipts, and the like. These are being housed in the Baker Library of the Harvard School of Business. The Fifteenth and Sixteenth Centuries are represented by the Medici accounts loaned by Mr. H. Gordon Selfridge of London. For the Seventeenth Century there are the records of the first iron works in Massachusetts. The Eighteenth Century can be studied in the Thorndike and Hancock papers; the Nineteenth Century in the Gordon Dexter and Nathan Trotter records. The books of the Massachusetts Bank, established in 1784, have been classified and are being studied for early publication. The Slater papers, a rather bulky collection of books, throw light upon the rise of the factory system in America.

It is a reasonable hope that similar records will be treasured and studied in other parts of the United States. Commonly, historical societies find no room for such material, largely because they have no interest in it. Departments of economics and schools of business might do something to stimulate existing historical societies in this direction or affiliate with the existing national society, the Business Historical Society.

When we have the information necessary, and it is indeed available in slender form for the period from the Twelfth to the Twentieth Century, we still have the problem of how to present it. The case system seems to be peculiarly applicable, because of the fact that the business man or firm is the unit in business history. Some problem of business policy connected with a particular man or situation can be made the focus of attention. Of course, in a school of business, where such work is most applicable, there may exist great prejudice against history. This can be in part overcome, however, by the case, or problem, method which has the business man's point of view or at least records his struggles. The novelty of the presentation, coupled with the interest in a concrete business situation, goes a long way toward overcoming impatience with past events. To be sure, each problem should be correlated with a corresponding issue existing today. Apart from the difficulty in finding the time, this is not hard to do.

But here comes a dilemma. The case method of study in business history presupposes a good background in economic history. Now, this is exactly what we do not find among students of schools of business. Accordingly it becomes the duty of the instructor to present both background and case. Take time to do justice to the case itself and you have missed the invaluable background. Spend your time on the background and the full significance of the case is lost. The solution lies probably in a very careful preparation of the details of the case in written form, followed by illustrative lectures on general, and especially economic, history.

The effort to study business history in this way is worth while because of the significance of the evidence and the training involved in facing business policy as a whole. In the historic past, whether of Jacob Fugger or of Jay Cooke, we can relate the major facts of private business to the major facts of general development. This is often, perhaps commonly, more difficult to do for our own time than for the past.

In order to assist in the building up of the new subject, a journal is to

be established in 1928. But this journal is to assist an old subject as well, as its title, the *Journal of Economic and Business History,* clearly indicates. Economic history is the parent subject and will naturally be the main interest of the new journal. In this country it has long needed a magazine devoted to its special interests. Heretofore no long articles could be printed; and only those on certain aspects of economic history would be ordinarily considered. The *Economic History Review,* published in England, has had a good start and doubtless has a great rôle to play; but so far, it appears only once a year and will doubtless be more or less specially concerned with English economic history. At any rate, the new periodical, a quarterly, is designed not to rival, but to co-operate with, the *Review.* Although the economic and business history of no country or age will be excluded, that of the United States will receive the chief emphasis.

Arthur H. Cole.—One of the most interesting and important developments of recent years for the study of economic history is the formation of the Business Historical Society. This Society was organized in 1925 under the inspiration of Mr. Charles H. Taylor, manager of the *Boston Globe,* Mr. Frederic H. Curtiss, Chairman of the Federal Reserve Bank of Boston, and Dean Wallace B. Donham of the Harvard Business School. Its purpose is the collection and preservation of business documents—the original material necessary for the study of business and economic history. Already the Society has 253 members, including many of the most prominent business men and financiers of the country.

There is peculiar need for an institution of this sort, since invaluable business records are destroyed daily by fire or because of the lack of appreciation on the part of their possessors of the intrinsic worth of such documents to students of economic history. Records of public authorities, even of the national government, such as old tax returns or the records of customs houses, are likewise disappearing without thought being given to their importance in economic research.

Again when original business records do exist they are frequently so inconveniently located as to be for the most part unavailable to the ordinary student. Sometimes the documents relating to a single industry are scattered over the country, often they are unknown and must be run to ground by the zealous investigator, while not infrequently they are housed in lofts or cellars where working conditions are particularly bad.

An institution of the sort of the Business Historical Society may be of further service to the economic historian, for with its funds it is able to purchase the rarer printed material and assemble files of documents which are not obtainable in the ordinary college library. Outstanding cases in this regard are the collections of railroad material in the Bureau of Railway Economics and the Harvard Business School.

Since its organization, the Business Historical Society has directed its energies along four lines, in addition, of course, to the prosaic one of securing members. First, it has through Professor Gay entered into correspondence with local historical societies urging them to collect and preserve busi-

ness documents, or to transmit them at the Society's expense to the office of the Society in Cambridge, and asking of them lists of records which they already possess. The results obtained have been moderately encouraging, response from the local societies has been fairly good, and the Society has been able to locate some material in these local institutions.

Secondly, the Society has been able to purchase a large number of books and pamphlets for its collection. The generous gift of twenty thousand dollars from Messrs. Charles A. and Eugene M. Moore of New York City and the gratuitous aid of Mr. Robert Smitley, the proprietor of the Dixie Bookshop, enabled it to make a heavy inroad upon the secondhand book market of business material. Other gifts of money have come in which for the most part have been employed similarly. Already, the Society can boast of twenty-five thousand to thirty thousand books and a large number of pamphlets, including some rare prizes in this field.

Perhaps equally important has been the success secured in the acquisition of primary material—the account books and other documents of business concerns. The records have come in of quite a few New England textile enterprises, such as the Boston Manufacturing Company; merchants' records have been added, such as those of Israel Thorndike covering his trade out of Beverly in 1800-1810, and those of Nathan Trotter and Sons of Philadelphia, covering the century and a quarter of 1790-1915 (fifty-five packing cases); while others worth mentioning are documents relating to the first iron works in America, that at Lynn, Massachusetts, in the Seventeenth Century and those of the Boston Water Power Company, the concern which filled in Boston's Back Bay.

Not only have these records been acquired, but specialists have been engaged and are now working upon the material to make it more readily available to interested students.

Lastly, the Society has ventured into the publication field. Bulletins have been issued from time to time—now ten in number—which tell of the current activities of the Society and describe some of the more interesting of its recent acquisitions. In addition it has begun the publication of *Business Historical Studies* for which the first volume on the "Industrial and Commercial Correspondence of Alexander Hamilton" is now in press. Finally, it is co-operating with the Harvard Business School in the issue of the quarterly which, under the editorship of Professor Gay, will soon bring out its first number.

As the issuance of the quarterly itself indicates, the connection of the Society with the Harvard Business School is in some respects close. Not only has Dean Donham been an active factor in the Society, but the Society's collection, by contract entered into with Harvard University, has been stored in the Baker Library of the Business School. Certain reasons seemed to dictate this action on the part of the Historical Society. Principally, there is a real advantage to the investigator—whatever his university connections—if he can go somewhere and find a large central library devoted to business documents of all kinds. The largest existing collection on business lines is that of the Harvard Business School, and there is prospect

that this collection will be augmented by books acquired through deposit from the Boston Public Library. Secondly, the Society might by the use of the Baker Library avoid the necessity of providing a storage place of its own. If the Harvard Business School opened its facilities readily to all comers—which it has agreed to do—there seemed no reason for the Society's refusing to accept the offer made by the latter to house and care for the material gathered by it.

The Society, however, would not, I am sure, have it appear that it holds any exclusive predeliction for Harvard University. It would be very unwise for the Society to attempt the collection of all American business documents in Cambridge. There would not be room even in the new Baker Building. Already, Professor E. E. Day has spoken of his interest in the collection of automobile records at the University of Michigan; and it seems entirely appropriate that such material should be collected at some such point. A good deal of copper mining material is already available at Houghton, Michigan, and that also seems a suitable location for all records of that Michigan industry. Similarly Pittsburgh might serve as the concentrating point for iron and steel material or Chicago for documents primarily concerned with the transcontinental railroads.

The Society has great need of aid from all those interested in economic history. Local historical societies need to be urged to preserve business documents, and local business men to send their old material to some safe place. The Society is also interested to build up a finding list of business documents, and needs the co-operation of scholars in the cataloguing of records available locally.

Finally, in its publication efforts, it must rely heavily upon the zeal of economic historians both in the preparation of additional units in its historical series and in the writing of articles for its new quarterly.

SIMPLIFICATION AND THE FEDERAL TAX ON EARNED INCOMES

By William R. Green, *Chairman*

Committee on Ways and Means
House of Representatives

Much complaint has been made that the Federal tax on earned incomes is too complicated and ought to be simplified and there seems to be some basis for this complaint. The new bill which recently passed the House, however, made no change in the present law. It may be well to explain why nothing was done with this provision in the way of simplifying it, and explain, to some extent, the difficulties encountered when an effort was made in this direction.

A report from a number of the collectors and an examination of such of the returns filed would seem to indicate that about 10 per cent of the errors made in individual income tax returns were in the computation of the tax on earned income. Many of the collectors and field officials recommended that the reduction on earned income be abolished and that, instead, there be granted some slight reductions in all the rates, which necessarily would be carried through to the end. This recommendation did not appeal to the Ways and Means Committee for many reasons. Its effect would obviously be to benefit much more those in the higher brackets than those who paid the lower rates. The intention of Congress in providing for this reduction in the law of 1924 was to benefit the wage-earners having moderate incomes. If the earned income provision was abolished in the manner suggested, the relief to this class would be inconsiderable.

Besides this, the Committee did not believe that Congress, having once recognized the principle that earned incomes should be entitled to an allowance, would be willing to abandon every argument in the way of reason and justice supporting it; for if there was anything wrong in the application of the principle, it was that it had not been carried further. Incomes derived from earnings do not have a permanent source like incomes derived from property. They will stop with the owner's death. They may be greatly diminished by disease and, in all probability, will greatly fall off or entirely cease in old age. Then, too, earned incomes are usually perfectly apparent to the collector of revenue. They cannot escape taxation and are not subject to the allowances which, under many circumstances, are made upon incomes received from property. These and many other reasons induced the Committee to retain this provision, the principle of which has been adopted by Great Britain, France, Belgium, Italy, and Spain.

But why, it will be asked, was not the law of 1924 simplified? No provision has been more severely criticized and none, I might say, more unreasonably attacked than the earned income provision of the law of 1924. It must be conceded that it has its faults, but, as a rule, they are not those that have been criticized so severely. The fact is that the difficulties connected with simplifying this tax and the short period of time that the Committee had for so doing prevented the accomplishment of what concededly is much to be desired.

Nothing is easier than to criticize and nothing more difficult than to do real constructive work. Proper criticism is often very useful and, whether well founded or not, it is the privilege of every citizen to criticize the laws that Congress adopts and, in a general way, to hold Congress responsible for them. Laymen, although they would themselves admit they were not capable of drafting the law, have a right to demand that Congress make it as simple as possible, and when the ordinary taxpayer has so much difficulty with a provision as the returns showed, it becomes the duty of Congress to endeavor to find a remedy.

Simplicity, however, is not the only goal. Any good lawyer can draw a short form for a bill, but it will be found, when it is applied to the millions of different cases which arise from the different circumstances of the individuals who are taxed, that it will work out with great inequity and unfairness. The first income tax that was ever put in force in this country was levied during the Civil War. It was very short and very simple. Two pages of an ordinary law book were all that was required for its printing, but it came near being a tax on gross incomes instead of net incomes, for few allowances and deductions were provided. Its inequality and injustice must often have been apparent, but the fate of the Nation was at stake and patriotic people were not disposed to contest it. Moreover, its rates were so low that its inequalities could be borne. If we applied the rates of the present law under similar provisions, the hardship and inequity which would be caused would make the statute unendurable. The complications of our present law arise, in large part, because we have sought to do something that has never been thought of in connection with any other tax. We have endeavored in framing the tax on earned incomes to adjust the application of the law to the condition of the taxpayer with reference to his ability to pay and, as far as possible, to prevent its working unjustly and unfairly between different individuals. We have all sorts of exemptions, allowances, and deductions provided for such purposes, with reference to other provisions, but each and all of them have added greatly to the complexities of the law. These provisions have done much to prevent hardship, but they have also greatly increased the complaints that the law is too complicated.

The attempt to remedy the inequities of the former law made by the provisions in the Act of 1924, with reference to earned incomes has had, in general, the same result as described above. Singularly enough, people generally do not realize that the most simple taxes are, as a rule, the most inequitable in their workings between the different taxpayers. The best known example is the ordinary tax on real property which is levied by nearly all the States of our Union. It has been described by many students of taxation as unjust and unfair in the extreme and there is practically no remedy in the courts or otherwise, for the injustice which it effects. It makes no difference whether the property returns an income or not, or how much of the owner's income is taken by this tax; and a survey of the situation among the farmers has shown that often from 30 to 40 per cent of the net income of the farmer, including that received for the work of himself and his family, is taken by this tax. The holder of the title to real estate may have, in fact, only a small equity in the way of ownership, but in most States he must pay the same tax as if he owned it clear of incumbrance. The owner of a small home in the city sometimes finds that taxes for improvements which benefit him in no degree actually deprive him of his property entirely. Even the gasoline tax, which is often spoken of as the fairest kind of a tax, taxes the owner of a small truck which he uses for transporting goods or property between towns, thereby earning a meager livelihood in the midst of severe competition, as heavily as the owner of the most luxurious car which is used only for pleasure purposes. Examples of this kind could be multiplied if it were necessary. The point is that so far we have never had—and I doubt that we ever will have—a tax which is at the same time both equitable and perfectly simple. Of course, it does not follow from this that our present law cannot be much improved. Everyone concedes that it can and should be, but everyone does not realize the difficulties that are in the way of so doing.

The Joint Committee on Internal Revenue Taxation called to its aid in preparing methods of simplification of the income tax a number of prominent tax experts and economists who to their credit served without pay. The result of the work of the Joint Committee, as aided by the advisory board consisting of these experts, is embodied in the report of the Committee made to the Ways and Means Committee of the House and the Finance Committee of the Senate, and most of the recommendations made in this report were embodied in the bill which recently passed the House of Representatives. Although the Joint Committee was able only to make a start in the way of simplification of the income tax, one of its recommendations related to the provisions in regard to earned income.

The plan recommended by both the Advisory Committee and the Joint Committee was unquestionably much more simple than the present method of computing the allowance on earned income. It would eliminate thirteen items from the return and the chance of error in it would be correspondingly reduced. Besides this, it would be much more easily understood by the taxpayer. The method fixed for computing the deduction for earned income by the present law appears to the taxpayer to be entirely arbitrary, and while it produces substantially the correct result, he does not understand why it follows. Consequently, with the understanding that he is to be allowed the 25 per cent credit, he often proceeds to make the calculation in his own way and error results. The method proposed by the Joint Committee was based on giving a credit against net income, subject to normal and surtax, equal to 10 per cent of the amount of the earned income. It followed the present law in that the limit of the incomes to which it was to be applied was fixed at $20,000, and, also, all incomes of less than $5,000 were to be considered as earned. Unfortunately, it was discovered at the last moment that an error had crept into the calculations with reference to the cost of this method to the Treasury and that a much greater loss would ensue than was stated in the report of the Joint Committee or was deemed by the Ways and Means Committee desirable. The greater part of this loss was because the plan resulted in giving a credit which ran all through the higher brackets of the income tax and lessened very considerably the amount to be paid by those having large incomes. At the same time, in many cases, it somewhat increased the amount to be paid.

There was also another objection which was made in the Ways and Means Committee to the plan of the Joint Committee and that was that while the calculation was much shorter and much more easily understood than under the present law, the average taxpayer would think that his earned income allowance had been reduced from 25 to 10 per cent, because the basis of the allowance was 10 per cent of the income instead of 25 per cent of the tax. The main difficulty, however, was, from the standpoint of the Ways and Means Committee, finding the necessary funds to put the plan in operation. Some of the Committee also thought that after once having learned how to compute the earned income allowance under the present law, the taxpayers would hereafter have but little difficulty with it. I confess I have my doubts and am still of the opinion that this section ought to be re-written. However, it is retained, and in another year we will be able to ascertain in the returns whether the taxpayer has made any progress in this respect if the Senate concurs. At the last moment, I proposed another plan to the Committee, which, while it

would not lower the number of calculations required as much as the plan submitted by the Advisory Committee, seemed to me to be practically foolproof. The plan was not entirely of my own devising for I had been aided in its preparation by the members of the staff of the Joint Committee. It left the provisions of the present law with reference to incomes of less than $5,000 exactly as they are now. The allowance for earned incomes beyond $5,000 was to be computed in accordance with a table to be inserted in the law and in the form for the returns. This table fixed the amount of the allowance or deduction for and on account of earned incomes above $5,000 in accordance with gradations of $400 each. The law might carry this provision in ordinary lines instead of a table, in which event it would not take up much space, but, in any event, if printed in double columns, it would not require very much space either in the law or in the returns. So much time, however, had been given to the consideration of the other plan that the Committee did not deem that there was sufficient time remaining for proper consideration of the plan to which I have last referred. The principal objection made was to inserting a table in the law, which seemed to be necessary as the amount of the tax credits did not increase evenly on account of the variations in the income tax rates, both normal and surtax.

Either of the two plans suggested may form the basis of future action. I am not prepared at this time to say which may be worked out for the better, but so far they afford the only solutions worthy of further consideration which have been proposed for simplifying the earned income allowance provision.

Any new plan that is suggested should, in my judgment, include the present provision with reference to incomes under $5,000. Although this part of the provisions of the law has been the most severely criticized of all, it is quite clear to me that it is absolutely necessary. To require the Bureau of Internal Revenue to compute, in the millions of cases of small shopkeepers and farmers, the precise amount that is attributable to incomes from capital, on the one hand, and to individual earnings, on the other, would simply swamp the Treasury officials. These parties never keep any books from which such calculations could be made. They could not make the returns for themselves nor could the Bureau officials make them. This provision with reference to incomes under $5,000 does injustice to no one and, on the whole, effectuates, although somewhat roughly, justice by its results. It is the personification of simplicity and the form of the return required on incomes of less than $5,000, which are over two million in number, is so simple that any one who understands the multiplication table can make it except in very unusual cases. Moreover, incomes of less

than $5,000 are in a large part earned incomes. There are persons whose income is wholly unearned in the legal sense who will get a small benefit from this provision, but many of these, from a point of abstract justice, are as much entitled to the relief given by the law as those who received income from their direct labors. I refer now to that numerous class of people who by years of labor and rigid economy have succeeded in saving a small sum for their old age when they are no longer able to work.

The most absurd criticism that has been made against the present law is that, in many cases of incomes less than $5,000, it gives a much larger reduction to the single man than the family man with dependents. These critics do not seem to have given the subject sufficient thought to observe that this situation will inevitably follow from the fact that the single man having smaller exemptions pays a larger tax than the married man with his exemptions and allowances for dependents, and that the allowance in each case is 25 per cent of the amount of the tax assessed. Each one gets this percentage of reduction, no more, no less, if his income is less than $5,000.

The difficulties in simplifying the earned income tax provision, which would seem to be a comparatively simple matter, illustrate the greater difficulties to be encountered in simplifying the more complex subjects involved in the law. As is said in the report of the Advisory Committee and the Joint Committee, "The complexities of the present law are due largely to efforts made to meet conditions previously unforeseen, to remove inequities, or to resolve doubts as to the intent of the law." It has been proposed that a very simple law be prepared. As I have before stated, it is comparatively easy to do this, but if a simple law is drawn which must be supplemented by numerous and complicated regulations subject to change by the Internal Revenue Bureau at any time, this will simply make confusion worse confounded. We have a case now in which three inconsistent decisions or regulations were promulgated by the Department within a comparatively short time. True, this does not often happen and probably never will happen again, but the Bureau is not so formed and constituted that it can properly determine what should be the policy in a large number of important matters, nor, in my opinion, could Congress constitutionally give it the power so to do. We must recognize, as stated in the report of the Advisory Committee, "that while a degree of simplification is possible, a simple income tax for complex business is not."

A question arises as to whether the whole law ought to be re-written. I am inclined to think it should be, but the Ways and Means Committee did not attempt it. Lack of time, if nothing else, prevented this being done. It is a tremendous task, and there is a possibility

that when it is finished the changes will bring trouble and difficulty to some who have made themselves familiar with the provisions of the present law and do not like to be compelled to give time and study to a revision no matter how much the former law is improved thereby. We have had an example of this in the criticisms on the rearrangement of the law made by the bill just passed by the House. This rearrangement was approved by the Advisory Committee and, in my opinion, will meet with general approval by the Bar as soon as its plan is fully understood. There is another matter which should be taken into consideration in this connection. It happens that some of the provisions of the present law which have been the most poorly worded have for that very reason been taken to the courts for construction and their meaning absolutely settled. No matter how clearly the new provisions may be drawn, at least in the opinion of those who prepare them, some of them will be attacked in the courts. Consequently, there are those who will argue that it is better to take the language as it stands than to re-draft it and have it sent once more to the courts. In my opinion, if the whole income tax law is re-written, the language ought to be put before the public for at least a year before being enacted into law in order that any just criticism of its form may be fully considered.

SIMPLIFICATION OF THE FEDERAL INCOME TAX

By Roy G. Blakey

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1. *Introduction.*—In the preceding paper, Mr. Green centered his discussion upon the earned income credit. In this paper, attention will be confined mostly to another one of the fifty simplification proposals recently considered by the experts of the Congressional Joint Committee on Internal Revenue Taxation. Before a body like the American Economic Association it seems peculiarly appropriate to discuss theoretical and fundamental aspects of simplification and particularly to consider such a basic matter as the nature of taxable income. The problem herein discussed is illustrative of many other problems of income tax simplification.

First we shall take up the proposal to disregard capital gains and losses in computing taxable income.[1] In many respects this is one of the most far-reaching of all simplification proposals. It involves con-

[1] "It is believed that it would be sounder taxation policy generally not to recognize either capital gain or capital loss for purposes of income tax."—A. W. Mellon, *Annual Report of the Secretary of the Treasury*, 1923, p. 9. See also *Report* for 1922, p. 14.

"We are decidedly of the opinion that this provision of the statute (the tax on capital gains) should be repealed—indeed that it should never have been incorporated in the law." "What Ails Business?—Tax Reduction the Great Desideratum," Editorial, *Commercial and Financial Chronicle*, CXXV, 2,567-2,573 (Nov. 12, 1927).

". . . . capital transactions have no proper place in an income tax, which logically and justly should be levied only on the annual recurring flow of income, which is generally looked upon by the ordinary taxpayer as income as distinguished from capital . . . .

"The repeal is also urged upon the ground that it would greatly simplify the law. Probably the most complicated provisions of the whole law are those dealing with this subject. Particularly is this true with respect to the necessity of establishing property valuations as of March 1, 1913."

"Brief Submitted by the Investment Bankers Association of America," *Revenue Revision, 1927-28, Hearings before the Committee on Ways and Means*, p. 183.

A different view is presented by another association of banks, as follows:

"Section 208 (a): It is not the purpose of this committee to recommend the elimination of any tax on capital gains or deductions from capital losses. Such a recommendation affects too directly economic principles and revenue receipts.

"The committee points out, however, two things: The elimination of the tax on capital gains and the deduction of capital losses would simplify the preparation and auditing of returns more than any other change that could possibly be made; it would eliminate among others, the following complications:

(a) March 1, 1913, values,

(b) Application of stock dividend and stock-right principles,

(c) Values at date of death or date of gift,

(d) Allocations in cases of reorganizations, recapitalizations, consolidations, and mergers.

"As an alternative: Extend provisions to all transactions resulting in taxable profits or deductible losses."

"Brief Submitted by Mr. Murphy on Behalf of the Committee of Banking Institutions on Taxation," *Revenue Revision, 1927-28, Hearings before the Committee on Ways and Means*, p. 488.

See also the same *Hearings*, pp. 157, 512.

sideration of the definition of income and of the possibility of doing away with the complicated and troublesome valuations which clog the administrative machinery. Certain aspects of this problem can be illustrated by a second major problem of simplification and equity; namely, the taxation of corporations in such a way as (1) to prevent discrimination as between corporations, partnerships, and individuals and (2) at the same time to prevent evasion of surtaxes upon undistributed earnings.

At the beginning of this discussion it may be well to remember that the income tax derives its great support from the general belief in its essential fairness. Any proposal for simplification is foredoomed to failure if it flouts unduly the reasonable considerations of equity. Perhaps the great majority of people believe that the income tax is more equitable than almost any other tax. Particularly they believe that it is more nearly in accord with ability to pay than tariffs and excises which, prior to 1914, were almost the sole sources of federal revenues. In supporting his income tax amendment to the Wilson Tariff Bill of 1894, Congressman McMillin of Tennessee said: "My friends, are we going to put all this burden on the things men eat and wear and leave out those vast accumulations of wealth?"

The ill-fated tax of 1894 was only the beginning of a twenty-year struggle which finally resulted in the adoption of the Sixteenth Amendment to the Constitution (1913) and the subsequent series of income tax statutes. The insistent and general demand for the income tax has not been confined to the United States, nor did it originate here. With growing popular control of government, the masses in most civilized countries have been adopting this method of shifting some of the tax burdens from their shoulders on to those of the richer classes. Ability-to-pay has been the watchword. The idea embodied therein has sunk deep into the popular mind. All proposals for tax modification must, therefore, consider the strength of this popular demand.

2. *The Present Concept of Income and Its Logical Implications.*— In its main outlines the argument for simplification by omitting capital gains and losses runs somewhat as follows. The Sixteenth Amendment to the Constitution provides for the taxation of income, not of capital. The Supreme Court does not permit Congress to define income as it may chance to please; it has power to tax as income only what is actually income.[2] Economically or theoretically, capital gain is capital, not income; therefore it should not be included as income for taxation. From an administrative standpoint it is very difficult, if not impossible, to measure capital gain because such measurement requires valuations as of March 1, 1913, or/and of some other date more or less

[2] Eisner v. Macomber, 252 U.S. 189, decided March 8, 1920.

remote. The assignment of capital gain to the year or years "realized" results in discriminatory rates of taxation and its taxation at any rate is harmful to business inasmuch as it is a penalty upon sales or exchanges of real estate and other capital assets. The adoption of the proposal to disregard capital gain and loss would remove all of these difficulties, particularly it would do away with the valuation difficulty which is chief of all troubles connected with income tax administration and adjudication.

It will be admitted that the administration of the income tax would be greatly simplified if it could be rid of valuation problems, but we may inquire into the validity of the contention that capital gain is not income and, further, whether its omission from income taxation would eliminate or lessen the problems of valuation.

Some of the arguments of different economists which are in point here may be briefly summarized. It is argued that income is not what one receives but what he spends, consumes, or the satisfaction he derives from consumption. Capital is not income, rather it is the capitalization (reflection) of expected future income. Appreciation of capital is not income but capital. Separation of increment from capital is a necessary condition of the emergence of income. "Its (income's) three essential characteristics are: *receipt*, *recurrence*, and *expendability*." [3] An opposing definition is: "Income is the money-value of the net accretion to economic power between two points of time." [4] Obviously this last

[3] Among other references the following may be consulted in this connection.
Fisher, Irving, "The Rôle of Capital in Economic Theory." *The Economic Journal*, pp. 511-537, December, 1897.
The Nature of Capital and Income, p. 427, 1906.
"Are Savings Income?" *Publications of the American Economic Association*, pp. 21-47, April, 1908.
"A Reply to Critics." *Quarterly Journal of Economics*, pp. 536-541, May, 1909.
"Comment on President Plehn's Address." *American Economic Review*, pp. 64-67. March, 1924.
Fetter, Frank A., "The Nature of Capital and Income." *The Journal of Political Economy*, pp. 129-148, March, 1907.
Seligman, Edwin R. A., "Are Stock Dividends Income?" *American Economic Review*, pp. 517-536, September, 1919.
Plehn, Carl C., "Income, as Recurrent, Consumable Receipts." *American Economic Review*, pp. 1-12, March, 1924.
Flügel, Felix, *The Income Tax*, 1927.
Hewett, William Wallace, "The Concept of Income." *Journal of Political Economy*, pp. 155-178, April, 1925.
The Definition of Income and Its Application in Federal Taxation, 1925.
Fairchild, F. R., "Federal Taxation of Income and Profits," *American Economic Review, Supplement*, pp. 148-170, 1921.
Adams, T. S., "Evolution *v.* Revolution in Federal Tax Reform," *Proceedings of National Tax Association*, XVI, 306-319, 1923.
Mills, Ogden L., "The Spendings Tax," *Proceedings of National Tax Association*, XIV, 327-331, 1921.
Houston, D. F., *Annual Report of the Secretary of the Treasury*, 1920, p. 34.
The three last-named authorities argue for discrimination in favor of savings rather than that they are not income.

[4] Haig, R. M., "The Concept of Income," *The Federal Income Tax*, pp. 1-28, 1920
Schanz, Georg, "Der Einkommensbegriff und die Einkommensteuergesetze," Fin-

definition would include capital gains as income whereas the other definitions would not.

We do not wish to enter into a long discussion of the nature of income and of all the controverted points connected therewith; rather we prefer to consider the matter briefly from a somewhat different approach from that usually taken. The concept of income is dynamic, rather than static, as is often assumed. Like the concept of value, it changes with time and purpose. It has taken us long to learn that there is one value for taxation and another for rate regulation. In fact, the use of the term "value" in the latter case causes great mischief. Similarly the income concepts of economists, accountants, and lawyers differ according to their purposes. As in the case of value, there has been a shifting of the use of the term and the application of it to different things in such a way as to cause much confusion. Under primitive homogeneous agricultural conditions of a practically self-sufficient economy, a gross-income concept without money valuations or much thought of capital or depreciation might have been entirely workable. Taxes could be levied in terms of day's work, sheep, wheat, or other commodities merely by number or quantity without much reference to values.

But in modern society, capital bulks large and economic relations are complex. Division of labor and exchange are characteristic of economic life and money values are almost universal. Both income and capital are measured in terms of money. All accounts are kept in such terms. There may remain a few individuals who still think in primitive terms and count their income in bushels of corn or head of sheep; and there may be others who calculate and spend their gross receipts as profits, regardless of depreciation or inventory values. Perhaps all of us have known some individuals and cities that have gone on the rocks following such concepts of income.

But our present civilization could not well maintain itself, much less progress, if it did not set up a net-income concept; if it did not allow for both "ordinary" current business expenses and also for depreciation of capital. In fact, depreciation is a cost of producing income, just as much as expenditures for raw materials and labor. Depreciation, like out-of-pocket expenses, can be made good only by deductions from gross income that might otherwise have been used for current or future consumption. That is, depreciation is a deduction from potential capital. At the time it comes into one's possession there is no difference in kind

anzarchiv XIII Jahrg. 1 Band. Quoted by Clarence Heer in an unpublished manuscript on the history of income tax theory.

See also "Report of Committee of the National Tax Association on the Simplification of the Income Tax," pp. 62-74, 1927. (To be published in 1927 *Proceedings* of the National Tax Association.)

in the wealth later designated "capital" or that designated "income." Whatever portion of receipts or "income" an owner sets aside for satisfying future wants is thereby made "capital"; it does not cease to be income for the year of its receipt because it has been earmarked "capital."

To arrive at net income, therefore, it is necessary to determine the amount of depreciation, as well as of other costs of producing income. Some times depreciation is calculated upon physical bases. If a building is supposed to last twenty years, a depreciation rate of 5 per cent is assumed. But obsolescence may alter this rate materially. This is another way of saying that depreciation is not fundamentally a physical, but rather a *value*, phenomenon. To use an old illustration: there may be shrinkages in quantity of apples, or wine, or other commodities stored for later use and yet no economic depreciation. In an economic world with a money economy, depreciation is measured in terms of money. Values at two different dates must be compared. Furthermore, the valuations that are required for determining depreciation serve also for determining appreciation. Without valuations one cannot know whether there has been depreciation or appreciation with the passing of time, much less can one know the extent of the depreciation or appreciation. If the calculation shows depreciation, practically all agree that it should be deducted from gross income to arrive at net income. If, on the other hand, appreciation appears, is it to be disregarded because it is difficult to determine?

If it lessens his taxes, no business man objects to the deduction of depreciation from gross income on the ground that it is difficult to estimate. He insists upon its deduction and usually endeavors to calculate it to his own advantage. But when it comes to appreciation, his own ox is gored; so a different theory of income must be evolved. He argues that capital gain is something different from income and hence should not be taxed. Furthermore, it is so difficult to measure that it is not practical to tax it anyway. He stresses and magnifies the difficulties into reasons for abolishing the tax, even if he has to hire economists, accountants, and lawyers to assist him in the job. This does not imply the conscious use of bribery. It is easy for all who have been brought up under the influence of theories and practices of English business, economics, accounting, and law to be swayed by such theories and practices, although they contain inconsistencies. Those who take the trouble to understand and adjust themselves to a system long perpetuated become its defenders, particularly if they are its beneficiaries. So we have strenuous American defense of an expedient that was adopted by England when she expected her income tax to be temporary.

Much of the capital gain had in mind by those advocating its omission consists of gain from casual sales or from sales of property held a long time. Not only is there English precedent for special treatment of capital gains, but even our own law gives them exceptional treatment. For example, capital gains are defined in the statute as those which arise from conversion of property held two years or more. If the gain is from property held one year and 364 days, it is not a capital gain. The real justification for exceptional treatment of such gains is administrative rather than theoretical. It is much easier to keep track of a regular dealer than of one who makes an occasional transaction; especially is it difficult to make the proper valuations if the property has been held a long time. But it is obvious that any period such as two years, ten years, six months, or six days is arbitrary. The essential nature of the gain is the same regardless of the length of time property has been held or how often transactions are made. Though the valuations which must be made in order to measure such gain may be difficult to determine, they are nevertheless the same valuations as those required to determine depreciation or appreciation in the calculation of "ordinary" income from capital.

Probably it is the proper future *use* of income, rather than its *nature*, when it first comes in that is the real reason that many think that capital gains are not income. The *use* concept of income will be discussed at greater length later, but it is in point here to call attention to the fact that in a highly developed money-exchange economy such as ours, capital gain can be used by an individual owner like any other income. Any form of wealth is convertible into any other form of wealth through the exchange medium. Capital gain or any other economic gain that comes in is income unless one perverts the original meaning of income. What one does with income after it comes in does not destroy the fact that it was, is, and always will be income for the income period in which it was received.

It may be questioned whether or not capital appreciation due to a lowering of interest rates increases ability to pay taxes. For example, the selling value of a bond or farm or other capital may increase and yet the annual yield therefrom remain stationary or even decline. If the bond should be sold and reinvested, this would not normally change the rate of return. What benefit or increase in ability to pay taxes accrues to the owner by virtue of a higher rating of the capital value if the owner really gets no more annual return? He may even finally have the bond redeemed at the same face value that it would have been redeemed at whether the selling value had gone up meantime or not.

It will be of some aid perhaps to divide the discussion of this question into three parts: (1) Is the owner of such appreciated capital

better able to pay taxes in the year of accrual than he was previously? (2) Is he better able to pay taxes than others whose capital does not appreciate? (3) As a long-time proposition, is he better able to pay taxes because of this appreciation?

With respect to the first question, it is clear that if he has a capital appreciation, he can sell what he has for more than he could before, so that in the year of its accrual, he has at his command more purchasing power to use as he chooses. Clearly, for the one particular period in which capital appreciation occurs, the owner has greater economic ability than he would have had without the appreciation.

It is obvious also without further discussion, that for the year in question, he has greater economic ability than other taxpayers whose capital failed to appreciate, other things being equal.

Let us now consider the third question; that is, whether or not the appreciation of capital increases long-time ability to pay taxes. The answer to this question should be divided into two parts depending upon whether it is assumed that the lower interest rate and the consequent appreciation are permanent, or whether they are temporary. If the appreciation is permanent and the annual income from the capital is not changed, the owner obviously has the same annual income as before and just before the end of his life or at any other time can cash in for a larger sum; that is, has greater ability to buy or pay for anything than if there had been no appreciation. It may be thought that he cannot realize upon capital appreciation soon after it accrues without destroying his capital and thereby destroying all subsequent incomes. If, however, before the appreciation occurred he had sold and consumed all of his capital he would have prevented the accrual of all future incomes from such capital. If he had sold and consumed only a part of such non-appreciated capital, he would have eliminated a proportionate part of otherwise possible future income. But if his capital appreciates, he is in a position to secure more consumption goods now if he sells all. Or if he wishes to sell only a part, it will take a smaller proportion of the larger total to secure a definite amount of present consumption goods than before the appreciation. He will consequently have left a larger proportion of the total which will give rise to a larger future annual income than would have been the case if his capital had not appreciated. In this case, therefore, appreciation of capital has resulted in greater ability to pay.

But suppose the appreciation has been temporary only. In such a case, there may be no long-time net increase in ability to pay, but this does not mean that including capital gains in taxable income necessarily works injustice or is necessarily contrary to the fundamental tenet of income taxation. Always in theory and usually in practice,

the deduction of capital losses is coupled with the inclusion of capital gains in calculating net income. If the appreciation is followed by depreciation within the same taxable year, they counteract each other and only the net or difference is reported as affecting income. But if appreciation is reported one year so as to increase the income of that year, then when depreciation appears later it is a deduction from "ordinary" annual income. The sum total of such deductions allowable aggregate all original capital, plus appreciation. Thus it is seen that the inclusion of capital gain does not result in double taxation. The inclusion of capital gains and losses in income calculations in this most unfavorable situation does not run contrary to ability to pay.[5] In nearly all other cases it is obviously thoroughly supported by this criterion.

In general it may be said, that if depreciation in the case of machinery or other capital goods is to be allowed as a deduction from gross income to arrive at taxable net income, logic requires similar handling of all other forms of capital depreciation and, furthermore, it also requires the inclusion of all capital appreciations as a part of income.

The Supreme Court included "realized" capital gains in the definition of income when it said: "Income may be defined as the gain derived from capital, from labor, or from both combined, provided it be understood to include profit gained through a sale or conversion of capital assets."[6]

The administrative difficulty of measuring "realizable" as opposed to actually "realized" capital gains doubtless was the fundamental reason for not including the former in the definition. Logically any valuable or exchangeable gain which comes within one's ownership is income whether actually exchanged or not. If it is not actually "realized" though "realizable," it is as if the owner had sold capital and then had reinvested in the same thing. There is just as much reason for assuming income in such a case as where a person actually sells property and invests the proceeds in something else. As a matter of fact, it is not the sale or conversion of property which brings in the income; the appreciation or gain already exists; the sale merely discloses and measures it. Income is coincident with value appreciation. But, the practical application of a tax requires measurement; so the Court was constrained to say that there is no income until it is measured. This is not logical though it may be practical.

As already stated, however, the difficulties of determining capital

[5] General price changes involve related but somewhat different problems, which limited time and space forbid taking up here. The same is true with respect to the effect of yearly exemptions and graduated rates.

[6] Eisner v. Macomber, 252 U.S. 189, decided March 8, 1920.

gains and losses add little or nothing to the existing difficulties of determining "ordinary" net income from capital. Practically the same valuations are required in both cases. If there are greater administrative difficulties in determining appreciations than depreciations it is probably because the parties concerned fight harder and longer about valuations which result in increased taxes than they do about those which lessen taxes.

If there were a regular and universal practice of keeping accurate inventory records and basing income tax returns thereon—in other words, if the accounting of all were as good as that of the best business houses and as good as the best business management requires—the whole valuation problem connected with both depreciation and appreciation, including capital gains and losses, would be greatly simplified for tax purposes. There would still remain the difficulty of making valuations where market values are not well established. This is a difficulty now in connection with "ordinary" depreciation and obsolescence, even though in such cases it does not always assume such proportions as in the case of some capital-gain valuations.

As a matter of fact, the evils of inaccurate valuations can be overemphasized. Fluctuations in income due to unstable prices of inventories can be lessened by the use of averages, though England's experience with averages has not been altogether satisfactory. If too much depreciation is allowed one year, this reduces possible allowances for succeeding years. If certain valuations make capital gains somewhat too large, the bases for calculating future gains are increased, hence future capital gains and taxes thereon will be smaller. After basic valuations are once made, there should be much less difficulty in keeping them up to date than there was with respect to their original establishment. Much of the basic information necessary for future valuations has already been accumulated in connection with past tax laws. To throw this away is unnecessary waste and very bad policy.

We may digress a moment to consider a complicating factor. In truth, one of the chief inequities and hence one of the main causes of manipulation and difficulty in connection with the taxation of capital gains is due to something other than valuation but closely connected with it; namely, to varying tax rates. This same variation of rates complicates also the corporation tax problem which we wish to mention later. Because of difficulty in valuing capital appreciations and the consequent failure to include them in computations of income each year, such gains tend to be lumped in one or a few years and thus occasion the application of heavier tax rates than if the gains were distributed over a series of years as they accrued. Both graduation and changes in rates occasioned by amending revenue acts not only cause discrimi-

nations but result also in constant pressure for tax reduction and in manipulation in order not to "realize" income except at the most favorable times. Stability in the tax law and its rates would lessen this evil. Fortunately, the further we are removed from war conditions, the greater becomes the possibility of normal stability.[7] The special rate of 12½ per cent upon capital gains is an attempt to meet part of the difficulty. This removes some of the restraints upon sales and exchanges of capital assets and compromises the problem of discriminations, but it does not meet it much more equitably than does the flat tax on corporations to be discussed hereafter.

As already stated, the impelling reason for the inclusion of capital gains in taxable income is the democratic belief in the "ability-to-pay" criterion and the set purpose of the people to put a substantial part of tax burdens upon those making such gains. The larger share of capital gains is probably made by the corporations and the well-to-do. In any case it is difficult to deny that capital gain usually increases the recipient's taxpaying ability. A capital loss has the opposite effect. The ability-to-pay idea gets its popular support on the grounds of individual equities. The measure of tax liability is not *social* income but *individual* income. The tax is personal. In our money régime, capital and income are interchangeable. Otherwise, money would not be a measure of both—capitalization would not be possible. Altogether it seems difficult to maintain that *any net accretion* to wealth is not income within the logical meaning of that term as popularly used, despite some popular inconsistencies.

3. *Evolution of the Concept and Definition of Income.*—Let us consider the evolution of the idea of income. We have already suggested that income is a dynamic rather than a static concept. The controversies over definition are due largely to different interests, private and public. The purpose to be achieved is the dominating factor. The *use* of income—what comes in—rather than the *nature* of income is the real question at issue. In order to secure the desired use of income, the continual attempt is made to shift the definition from the original literal and natural meaning. Today, if one speaks of his income without a qualifying term, no one in a modern community understands him to mean gross receipts or even gross income, but rather net income measured in money terms. Not all are entirely agreed as yet as to just how "net" should be defined, because they are not agreed upon the proper use of what comes in. But nearly all agree that it

[7] The suggestion that income tax rates should never be changed but that all variations in needs for revenue be met by changes in rates of other taxes, however, seems to be the result of a rather narrow view. This might simplify income tax administration at too great a cost. See *Report by Committee of the National Tax Association on Simplification of the Income Tax*, pp. 42-44, 1927.

is net income rather than gross income that constitutes the essence of income. This may be said to represent approximately the present status in the evolution of the term. As already shown, this definition has great survival value because it helps to maintain the capital required for our present state of capitalistic civilization.

But this concept is attacked and modified by others with different *use* concepts of income. The "clear-income" or "surplus-income" idea is gaining force and is being put into practice in some form in most countries by means of "exemptions," "credits," and other deductions from net income. Another concept of income which is a very thinly-veiled effort to control the use of what comes in is the definition which makes income coincide with expenditure, consumption, or the psychic reactions from consumption. By defining income not as what comes in, but as only that portion which is devoted to a certain use, we can levy taxes so as to encourage what we favor and discourage what we do not favor. It is not necessary, however, to put the exemptions into the definition, nor is it necessary to tax all income; we can keep our natural definition and tax only income used in a certain way. But modifying the definition is a very successful psychological trick which has accomplished wonderful results. As a matter of fact, much of the merit of the term "capital" is psychological. The race has made a tabu of the term. To label anything that comes in as "capital" is to say, "This thou shalt not touch; however much thou desireth it to satisfy present cravings, it is reserved for ministry to future wants." Those who would exempt savings and those who deny that savings are income stand side by side with respect to income tax legislation. Both are saying in effect, that private or/and public interests require more encouragement for the accumulation of capital than the usual concept of net income without exemption of savings.

Let us digress again and further. A double purpose may be served at this point by citing certain aspects of another major problem of simplification as an illustration of the important part played by economic and social policy in modifying the definition of income or in making exemptions for tax purposes. It makes little difference in effect whether undistributed corporate earnings are favored by exemption or by exclusion in the framing of the definition of income. In either case, corporate and social capital creation is promoted. The main problems concerning the taxation of corporations turn upon this question of social policy.

Let us outline the situation. Corporate income is taxed now at the flat rate of 12½ per cent. Distributed earnings are exempt from the normal tax but subject to the surtax in the hands of recipients. Partnership income as such is not taxed at all but the aggregate in-

dividual income of the partner, including non-partnership income as well as partnership profits, whether distributed or not, is subject to the regular normal and surtax rates applicable to other individual incomes. It is obvious that many small stockholders are in effect subject to higher taxes than non-stockholders having equivalent incomes. Exemptions combine with graduated rates to magnify the inequity. On the other hand, wealthy stockholders, usually among the directors of corporations, can nullify surtaxes by leaving earnings undistributed; in fact, it is generally believed that corporations are thus availed of to evade taxes on a large scale. So far no one has succeeded in putting a provision in the law which will meet all of the difficulties. We might treat corporations as we treat partnerships, as England does practically with respect to the normal tax. But this would complicate administration rather than simplify it. Every stockholder subject to taxes at less than the corporate tax rate could make claim for refund. For example in a typical year under the British practice,[8] 2,515,000 persons were chargeable with income tax; 1,991,000 claimed repayment; and in 1,500,000 cases repayments were made. Not all but a large part of these refunds were due to the tax withholding by corporations. The 50 per cent penalty of our own law has seldom been enforced, largely because of the difficulty of determining the reasonableness of accumulated reserves in the form of undistributed earnings. The bill now before Congress attempts to meet the situation by several devices which may or may not improve the situation. Provision is made for special treatment of the "personal holding company," which would be taxed 25 per cent upon undistributed profits in excess of 30 per cent of the net income of any year. With respect to other corporations, the "reasonable-needs" clause is still retained but the penalty is reduced to 25 per cent instead of the unreasonably high and almost unenforceable rate of 50 per cent. Corporations accumulating more than 60 per cent of income must file detailed reasons for net accumulations and from time to time thereafter must file reports of actual disposition of the amounts so accumulated. Shareholders have the option of being taxed as partners and may thus avoid the 25 per cent penalty. The Commissioner of Internal Revenue or any collector may require any corporation to report "accumulated gains and profits and the names and addresses of individuals or shareholders who would be entitled to the same if distributed, and the amounts that would be payable to each."[9] There is much more detail and qualification which it is unnecessary to add here. The point is that the bill has been cluttered up with a lot

[8] Spaulding, H. B., *The Income Tax in Great Britain and the United States*, p. 235, 1927.
[9] 70th Congress, 1st Session, House of Representatives 1, Secs. 104 and 148.

of new phraseology. It may or may not simplify administration. That is yet to be seen. In any case, it does not meet all the difficulties; it is a compromise.[10] The controlling corporation directors whose incomes, if distributed, would get into the upper brackets can still keep undistributed at least the 30 per cent, in some cases 60 per cent, which would otherwise be subject to the highest surtaxes. This should be enough to satisfy most tax evaders. It is true that the extent of evasion may be reduced by these provisions. If so this is all to the good but it still remains to be seen how many loopholes can be discovered in the many qualifications with which the provisions are hedged about.

But Congress could go much further than this and achieve real simplification. If it saw fit, it could refuse to compromise and do away with all of the important difficulties in this connection except one. Suppose it should eliminate the taxation of corporate incomes except for a flat tax upon undistributed earnings equivalent to (or greater than) the combined normal and surtax rates applicable to the highest brackets of the individual income tax. Suppose that it taxed all distributions in the hands of individuals. The rate applicable under the present law would be 25 per cent (or more). As a result there would be no discrimination as between partners and stockholders with respect to distributed earnings. Whether stockholders were large or small, there would be no inducement for wealthy directors to accumulate earnings to avoid surtaxes. There would be no yearly problem of accounting for undistributed earnings allocated but not actually distributed to stockholders. It is true that there would be inequality if all income were not distributed and there would be a great temptation to distribute funds which should be retained in the business. This is the one great and perhaps fatal drawback to the scheme. It is possible, of course, that sufficient capital for expansion could be secured by sale of stocks and bonds, but psychologically we are probably not yet prepared for such a step. Not enough of us have sufficient self-restraint and wisdom to save the capital that we as individuals and as a society need. We must have corporations or governments or other agencies or devices to make us save in order that we may have the capital to maintain and improve our economic status. Certain income must be exempted from taxation by definition or otherwise in order to achieve the private and public ends thought desirable.

From the standpoint of equity alone, there is no good reason at all for taxing corporations as such. Ultimately, all tax burdens are personal, but for reasons of administration and also for other reasons

[10] The same is true of a recent amendment to levy a graduated instead of a flat tax upon corporations having incomes of less than $15,000.

of economic or social policy, in our present stage of development it seems desirable to collect some taxes from corporations. We may rationalize and explain a corporation tax as a franchise tax, citing special benefits accruing to corporations as justification. But taxes cannot be apportioned according to benefit any more accurately than according to ability to pay. As a matter of fact, the benefits, if any, accrue in the form of increased income to individuals. Getting nearer to real reasons, corporations are easy marks and taxes on them may be quite fruitful in yield, even if provocative of great administrative difficulties; so we tax them, despite the inequity. A chief source of government revenue and of society's capital supply must not be destroyed by a rigid attempt to attain equity, if this means the sacrifice of something else more important.

In the last analysis these are questions of economic or social policy and are determined much like other related questions. Social regulation, whether of public utility rates, hours of labor, issuance of currency, imports of foreign goods, or taxation, is concerned with the public control of private property. Taxation is an outstanding example of such social control. It is concerned with questions of what shall be done by government and what left to private enterprise, how costs and benefits of public activities shall be distributed, how such distributions shall be modified by questions of administration and also by questions of business and social policy. If society decides that proper public policy demands greater encouragement of capital accumulation it may exempt from taxation savings or/and capital gains, either by specific exemption or by changes in the definition of income comparable to changes already evolved. In fact, it might define income as expenditure or superfluous expenditure when we have reached that stage. Under such a definition of taxable income, it is possible that we might do away with the necessity of making many troublesome valuations. To determine income it would be necessary only to have every one keep account of his "consumption" expenditures, eliminating therefrom his investment expenditures. It will not take a great deal of thought to recognize the administrative difficulties involved in this method. But if we should adopt the method suggested by the foremost advocate of this income concept,[11] we would calculate income very much as now, except that we would deduct savings. This latter method would mean very little simplification. In fact, with even more stress upon saving and capital building than the present net-income concept involves, we would be fully as unable as now to rid ourselves of that great hindrance to simplification; namely, valuation. In truth, the

[11] Fisher, Irving, "The Income Concept in the Light of Experience," p. 17 (English reprint from Vol. III of the *Weiser Festschrift*, 1927, Vienna).

only way to escape from economic valuation is to escape from the economic world.

But valuations are exceedingly difficult to make. The more capital we have, the greater the risks of making mistakes as to future wants and their satisfaction, hence the greater the difficulties of determining values. But increasing accumulations of capital are required by our increasing demands for services. We are caught in a chain of complexities and cannot escape by crying "back to the simple life." The actual trend of practically all tax legislation, especially of income tax legislation, is away from simplicity for the sake of equity, or for the sake of some social policy. This is almost inevitable because the problems of taxation are so close to life itself.

4. *Conclusions and Recommendations.*—Before making concrete suggestions we should summarize a few facts which we have not time to discuss in detail. The work of the Bureau of Internal Revenue has been badly clogged. Much of this has been due to war excess-profits taxes abolished in 1921. Most of the old cases have been "closed," though forty thousand of the "closings" have been merely unloadings upon the General Counsel, the Board of Tax Appeals, and the Courts. The Board of Tax Appeals is said to have a sufficient grist ahead of it to prevent consideration of new cases for four years if no additional petitions are filed. Up until October, new petitions filed were exceeding disposals but a new special advisory committee established in the Bureau has succeeded temporarily at least in disposing of old cases as fast as new appeals are being added. How long this situation will last is unknown.

The great accumulation of unsettled cases may be laid either to the complexities of the law or to incompetent personnel, or to both. Income has been difficult to determine, legal and illegal evasion and attempts at evasion have been common, "closed" cases have been reopened by appeals, reversals of rulings, court decisions, etc. Of prime importance has been the matter of personnel. The turnover has been tremendous. The Bureau has been a training school for those receiving better offers on the outside. Many of the best men have thus been drawn away. Those remaining have had more than they could do. New men require time to learn the ropes, often they have not known precedents, or have not chosen to follow them. Reversed decisions have reopened many old cases. Young and inexperienced men overloaded with cases have had to fight able and experienced representatives on the outside. Often they have made mistakes and have not commanded confidence and respect of the taxpayers and their representatives. They have feared to take responsibility and settle cases. The whole Bureau seems to have shrunk from taking responsibility. It has encouraged Congress to

complicate the law by loading it down with details. Much of the present congestion before the Board of Tax Appeals is due to failure to settle cases in the Bureau. Perhaps nothing would improve income tax administration so much as a proper personnel which could and would make good decisions upon many matters which are now sidestepped by filing appeals. The way to meet the situation is not to evade it but to face it. We should have a personnel competent to make, and willing to make, good valuations as well as to face the other difficult problems that good administration requires.

In emphasizing the prime importance of personnel there is no intention of minimizing the desirability of statutory simplification in so far as considerations of equity permit. This is a matter which has been and will be discussed by others and which we hope to be able to consider elsewhere at another time. Some simplifications have already been made, notably through the abolition of the excess-profits tax, the reduction of tax rates and the raising of personal exemptions (not all of which we approve, by the way). Other simplification amendments are under consideration and, if continued, the Congressional Joint Committee on Internal Revenue Taxation and its advisory committee will doubtless propose still other simplifications. Even the situation with respect to personnel appears to be improving. There are no longer so many outside openings with such large inducements for Bureau resignations. The outside demand for income tax experts is less and the supply is greater. Furthermore, the pending bill proposes unusual salary increases for about a hundred of the top men of the Bureau staff.

There is no denying the faults of our income tax statutes and of their administration. But many of the difficulties could not be avoided under the stress of war demands and in view of our political organization. All in all, we are inclined to regard as somewhat exaggerated the claims of those who insist that the income tax is being rapidly undermined and is doomed to early impotence. Possibly the wish is father to the thought in some cases. We are reminded of the early criticisms of the British income tax and of the many times in recent years when it has been cited to emphasize the faults of our own tax. We admit that it has some superiorities. Especially is the administrative personnel superior and subject to much less unwise political pressure. We have already profited much by British experience and we can profit still more.[12] But the superiorities do not all lie on the English side. In fact, there has been a very definite tendency of late

[12] One suggested simplification with respect to earned income credit taken from British law has just been rejected by the Ways and Means Committee, though the reason therefor is not clear. It appears to be political.

for the British to take some lessons from American experience. To mention only one example, there is a slow but perceptible shift toward the American position on the matters of depreciation and appreciation.

Those most impressed with the merits of the British system and most pessimistic about our own income tax might read with profit a recent comparison of British and American taxes by Mr. Spaulding, a Canadian unusually familiar with the laws and practices of both countries. From this book we quote the following brief excerpts:

"The enactment of an entirely new income tax statute every few years has great advantages. It keeps the law of income tax in one convenient statute; it permits of minor improvements in drafting without the necessity for a separate Act; and it frees the legislators from the inertia inevitable where an entirely new income tax Act occurs perhaps only once in a century. The result is that the United States income tax law is a modern, carefully drafted and logically arranged statute, whereas the British law is antiquated, ill-arranged and obscure and ambiguous in its provisions. . . . . The actual procedure frequently does not follow the statutory procedure. . . . . The situation is different in the United States. The revenue laws are modern and comprehensive, and practice is in accord with statute. . . . . The British policy is to have knowledge of the law and practice concentrated in official circles. It is felt that the less taxpayers know, the less possibility will there be of evasions and contentions. . . . . The Inland Revenue officers are supplied with manuals and detailed explanations of the law, but these are not available to the public. . . . . It speaks highly for the officers . . . . that they are almost universally respected and that there are practically no complaints [of discrimination]."[13]

Let us summarize briefly. We have taken one or two of many possible examples to illustrate the general problem of simplification. It is not so simple as the term sounds. Furthermore it is contrary to public policy to carry simplification to extremes. After we have gone as far as practicable in simplifying the statute, it is still necessary to improve political organization, particularly administrative and legislative competence, in order that we may meet the complex problems upon which advancing civilization depends. Ultimately substantial improvement depends upon advancement in general intelligence and morals. Our legislators and administrators are persons of our own choice, swayed by the pressure which we all put upon them. More immediately, there is strong argument for continuation of the Joint Congressional Committee with its advisory committee of laymen who are tax experts. Their interrelations with both Congress and the Treasury have been fruitful to date; their services are possible of much extension and intensification.

[13] Spaulding, H. B., *Income Tax in Great Britain and the United States*, pp. 14, 23, 247, 290, 1927.

Taxation is political in all the senses of that term. It is political all through its legislative and administrative phases, and even before legislation begins. It is a large part of the complex art of living together in vast multitudes in modern capitalistic society. Reforms are not reforms unless they will work. When the Golden Rule is not in general usage, practical men will make suggestions that will work in a society as its actually exists. It is important to have the best possible means of getting such practical suggestions.

There should be a small group of able men, possibly headed by one man, who would take up the study of income tax improvement in a comprehensive and thorough fashion. This matter is of sufficient importance to justify undivided and continuous study, rather than spasmodic and hasty attention just before or pending the passage of some particular law. Furthermore, it needs the attention of some who are not weighed down with details or with handling a multitude of other matters, either public or private. This particular problem should be the main business, the long-time, continuous business, not merely the occasional consideration, of some competent man or men having both ability and public spirit.[14] They should confer with and seek the advice of practical men, theorists, taxpayers, legislators and anyone else who can make fruitful suggestions. They might well have an expert board of referees. They should be able to command the confidence and secure the co-operation of legislative and administrative leaders. They should be both theoretical and practical in the most significant senses of those terms.

Improvement is not likely to be meteoric. Those who ask for the demolition of our present system and the erection of an entirely new structure hardly expect to be taken literally.[15] We do not expect either immediate demolition or a heavenly inspiration that will lead to the perfection of the income tax. Rather we look for gradual improvements as dictated by experience, both in text of statute and in administration. Well-planned and continuous consideration by a small but capable group might well develop a leadership for both official and public opinion that would quicken the pace of progress in these matters.

[14] The president of this Association has given years of notable service out of a very busy life to federal income tax improvement. It would be a wise investment for the United States Government to make it possible for him to devote his undivided attention to this matter for the remainder of his active life.

[15] "The most important consideration, occurring to the minds of the members of this committee is the genuine need of demolishing the entire present structure of our income tax system in order to build anew along simpler and sounder lines a structure more adaptable to present and future conditions." *Report of Committee of National Tax Association on Simplification of the Income Tax*, p. 1, 1927.

SIMPLIFICATION OF THE FEDERAL INCOME TAX—DISCUSSION

Robert M. Haig.—At the very beginning I wish to record my admiration for the skill with which Professor Blakey has made clear the inconsistency of demanding at the same time the refinements which make for equity and the crudities which make for simplicity. I wish also to give enthusiastic approval to his argument in favor of a broad concept of economic income and of a definition of taxable income which includes adjustments for variations in the value of capital assets. I agree that the difficulties of valuation can be overemphasized. Personally I believe that they have been overemphasized. Moreover as we continue to move away from that fundamental date of March 1, 1913, the difficulties of valuation must steadily diminish because of the relatively larger and larger number of transactions which will find a basis in cost rather than in a valuation as of that given date.

A qualification may be urged of one of Professor Blakey's statements, however. He contends that "the difficulties of determining capital gains and losses add little or nothing to the existing difficulties of determining 'ordinary' net income from capital" because "practically the same valuations are required in both cases." Should it not be borne in mind that the taxation of capital gains involves not only the problem of valuations but also the problem of the determination of the time when the transaction shall be deemed to be closed for purpose of computing the tax? Perhaps the most complicated sections in the Revenue Act address themselves to this second problem and it is only fair to recognize that they could be stricken out, if the taxation of capital gains could be eliminated.

Feeling as I do that an income tax which would allow capital gains to escape unscathed would, in this country at least, be an ethical monstrosity, I have noted with considerable pleasure the lack of response to the sentiments expressed in the 1923 report of the Secretary of the Treasury, quoted by Professor Blakey, and sponsored, so I am informed, by Mr. Winston, to the effect that it would be sound policy to ignore capital gains and losses. May I here express a pious hope that a recent suggestion, sponsored by Mr. Winston's successor, Mr. Mills, will receive a welcome of about the same degree of chill? I refer to the recommendation that the interest on federal securities be given wider exemptions under the income tax in order to give them a wider market. If adopted, this policy will, I presume, mean the abandonment of all effort to secure the elimination of the tax-exempt bond evil. Will the spectacle of our national government, handicapped by an investment market so narrow that it must float securities at a rate slightly over 3 per cent, rouse the country to such indignation that it will make this change striking at the very root of the progressive income tax?

The character of the arguments which are being advanced in support of this present proposal leads one to suspect that it should be considered primarily as a bit of political finesse. Perhaps it is really designed to

ascertain whether the movement for abolishing tax-exempt bonds is really hopelessly dead and to serve notice upon the states that, unless they are willing to co-operate in finding a really sound solution of this problem, the federal government will take steps to end the one-sided situation at present existing, under which the states and localities in effect benefit directly with the height of the level of the federal income tax rates.

In this connection attention may be called to an effect of Professor Blakey's interesting suggestion regarding the abandonment of the corporation tax, except for a tax on undistributed profits. There are many difficulties in the way of the adoption of this suggestion, some of which Professor Blakey has not found space to mention. But suppose they should all be met and the suggestion be put into effect. Would it not then be possible to abandon the present distinction between the normal and the progressive rate? Would there then be any temptation for the corporations to corner the federal issues and would not the opportunity be improved of subjecting the interest on federal bonds to full taxation?

A serious difficulty in connection with elimination of the corporation tax, which perhaps deserves a word here, is found in the problem it raises with respect to the territorial application of the federal revenue law. At present we try to tax all income arising within our borders, even that accruing to the credit of nonresident aliens and also (with certain exceptions) we try to tax all income from whatever territory it arises, accruing to the credit of our citizens wherever resident and to the credit of resident aliens. Whatever may be said of the criticism of the generous amplitude of this scheme of application, the corporation tax now performs a highly useful function in helping us to collect taxes on income arising in this country to the credit of nonresident aliens. Have we reached a point where we can have a financial Locarno and can declare the income tax a strictly personal tax on income from whatever source accruing to the residents of a country? Are we prepared to abandon all notion of using the federal income tax as a business tax? Personally, I am not at all certain that we have reached that stage.

It would be very interesting to give a trial to Professor Blakey's suggestion for the elimination of the corporation tax. It would also be interesting to see the normal rate eliminated. In its present form, the earned income provision is probably not worth its salt. I should be willing to see it scrapped in an effort to simplify, if at the same time the discrimination in favor of capital gains were jettisoned. With the lower level of rates and with the greater stability of rates which should be now possible for a long period to come, this step would seem to be a feasible one and would result in considerable simplification.

In general, however, I agree that our greatest hope for achieving simplification lies in the direction of developing a group of public servants with the ability and the attitude toward the taxpayers which are essential to administration along the British lines.

THE ECONOMIC SIGNIFICANCE OF THE INCREASED EFFICIENCY OF AMERICAN INDUSTRY

By Woodlief Thomas

Division of Research and Statistics, Federal Reserve Board

During the first quarter of the Twentieth Century striking changes have occurred in American industry. Some of these changes have been especially pronounced in the last few years and have attracted world-wide attention because of the continued prosperity of industry in this country as compared with that of other nations. The more important characteristics of these developments are mass production, the integration of industrial operation into large enterprises, increasing mechanization of production, the rise of new industries, and the widespread everyday use of products which a generation ago were unknown or considered as luxuries. Output per person engaged in production has increased, and per capita income has likewise grown, permitting the people of the nation to purchase the additional products which the improved efficiency of industry has enabled them to produce. The causes of these changes are many and varied and the consequences are of considerable significance from the standpoint of social and economic progress.

From 1899 to 1919 the physical volume of production of farms, factories, mines, and railroads in the United States increased by 140 per cent, while population grew by only a little over 50 per cent. Thus production per capita of population is now nearly 60 per cent greater than it was in the final years of the Nineteenth Century. This estimate does not cover construction activities of various sorts, or development of facilities for communication or for recreation. It is probable that omitted phases of human endeavor—particularly those relating to recreation—have grown even more rapidly than those covered, so that the estimate quoted is likely an understatement of the increase in physical volume of production.

The volume of output for each worker engaged directly in production has increased since the beginning of the century at an even more rapid rate than that of production per capita of population. Output per person engaged in production has increased by 80 per cent as compared with 60 per cent of gain per capita of population.

Increases in physical volume of production and number of workers, from 1899 to 1925 for four major branches of industry—agriculture, mining, manufacture, and railway transportation—are shown in Table I and Chart I. These figures are based upon estimates made largely by

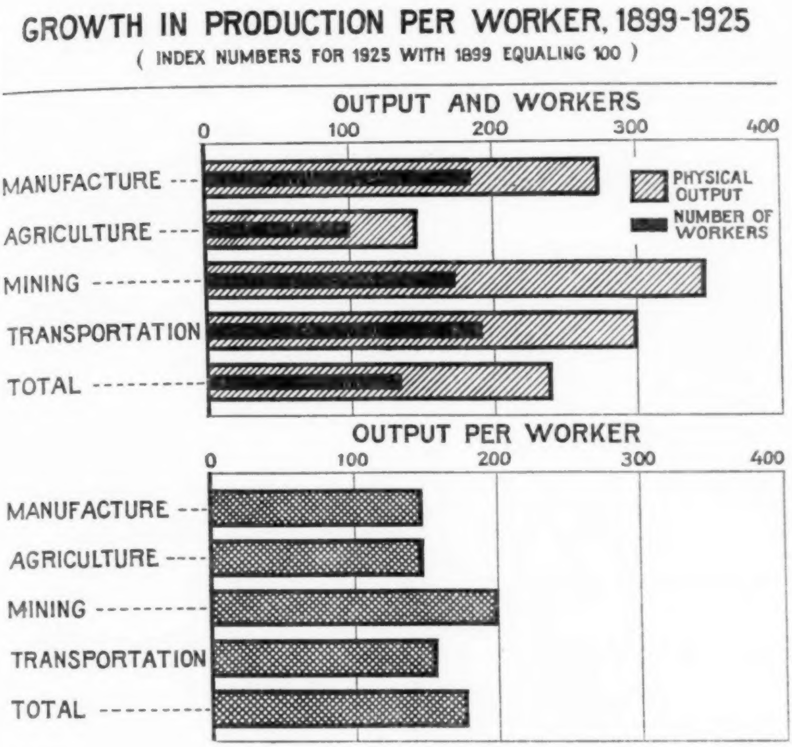

Chart I

Dr. E. Dana Durand of the Department of Commerce.[1] Dr. Durand used the most reliable figures available from various sources to represent the volume of production and number of workers and estimated others in cases in which available data were inadequate. The figures on workers represent total number of persons engaged in production—salaried employees and proprietors as well as wage-earners. The quantitative production figures are index numbers derived from statistics of physical volume of production of the important products of industry. The minerals and transportation indexes were compiled by Dr. Durand, the agricultural index by the Department of Agriculture, and the manufactures index by Dr. Edmund E. Day and myself for the Bureau of the Census.

The indexes for these four major industrial classifications were weighted by net value of output in the base year and averaged in order

[1] Dr. Durand was originally asked to read a paper on this subject, but was unable to do so because of absence from the country.

TABLE I

INCREASE IN PRODUCTION OF MAJOR BRANCHES OF INDUSTRY

Manufactures indexes are computed from data for 1899, 1909, 1919, and 1925. Other data are means of three years (with a few exceptions)

Period and Branch	Number of workers (thousands)		Index for end of period (Beginning = 100)			Weight—value at beginning (million dollars)	Weighted index (end)
	Beginning of period	End of period	Workers	Output[a]	Output per worker[b]		
1898–1900 to 1908–1910							
Agriculture	10,700	11,400	106½	113	106	3,500	3,955
Mining	600	1,010	168½	190	112½	600	1,140
Manufactures	5,300	7,700	145	159	110	4,830	7,680
Railways	970	1,575	162½	185	114	1,300	2,405
Total or average	17,570	21,685	123½	148	120	10,230	15,180
1908–1910 to 1918–1920							
Agriculture	11,400	11,300	99	119	120	6,100	7,259
Mining	1,010	1,050	104	145	140	1,240	1,798
Manufactures	7,700	[d]10,850	141	134	95	8,530	11,430
Railways	1,575	2,035	129	162	125½	2,390	3,872
Total or average	21,685	25,235	116	133	115	18,260	24,359
1918–1920 to 1924–1926							
Agriculture[c]	11,300	10,700	95	112½	118	15,700	17,663
Mining	1,050	1,050	100	127	127	3,175	4,032
Manufactures	[d]10,670	[d] 9,770	91½	128½	140½	24,750	31,804
Railways	2,035	1,860	91½	100	109	5,040	5,040
Total or average	25,055	23,380	93	120	129	48,665	58,539
1898–1900 to 1924–1926							
Agriculture[a]	10,700	10,700	100	147	147	3,500	5,145
Mining	600	1,050	175	348	199	600	2,088
Manufactures	5,300	[d] 9,900	187	275	147	4,830	13,283
Railways	970	1,860	192	299	156	1,300	3,887
Total or average	17,570	23,510	134	239	178	10,230	24,403
Mining excluding petroleum	576	858	150	244	163		
Petroleum	24	192	800	1,268	158		

[a] Averages for all branches computed by weighting component indexes according to the relative importance of the several branches in 1899, as determined by value of product, given in next to last column of table.

[b] Averages for all branches computed by dividing the average index of increase in output by the actual ratio of total workers at end of each period to total at beginning. The figure exceeds the weighted average of the indexes of output per worker in the several branches, because the largest increases in number of workers occurred in those branches in which average value of output per worker was relatively large.

[c] Figures for end of period relate to 1924 and 1925, and production figures for 1918-1919 are used for comparison with them, others for that period are 1918-1920 averages.

[d] The differences in the figures given for number of persons employed in manufactures for 1919 and 1925 are due to changes in the size of establishments covered, and to certain exclusions of industries formerly reported. The 1925 figure for comparison with 1899 was estimated from the percentages of change from census to census.

to obtain the composite index of production. The composite index of output per worker was derived from the two composites of output and number of workers. The figures for manufactures are taken from census records and apply to the single census year, while those for agriculture, mining, and transportation are three-year averages, adopted to diminish the influence of temporary factors such as unfavorable crops, strikes, wide cyclical fluctuations, and the like. In estimating output per person no allowance has been made for changes in number of working hours, partly because adequate figures are not available and partly because actual output per person engaged regardless of working time is the most significant fact from the economic standpoint and thus fits into the scheme of this paper.

Estimates of growth derived from these figures are at best broad approximations and are intended only to convey some general impression of the changes that are taking place in industry. As shown in Table I and Chart I there were increases in these four branches of industry in the first twenty-six years of this century of 139 per cent in the quantity of goods produced and traffic carried, of 34 per cent in the number of workers engaged, and of 78 per cent in output per worker. The increase in output per worker was 20 per cent in the first decade of this period, 15 per cent in the second decade, and 29 per cent in the last six years.

The growth in the production of minerals and in output per worker —far exceeding that of any of the other branches—reflects chiefly the rapid increase in petroleum output. The process of producing petroleum requires a relatively small supply of labor, and the value of output per person in petroleum production is greater than that for any other mineral product. Consequently the rapid growth in petroleum production has added proportionately more to the total output of minerals than it has to the number of persons engaged in mineral production, and therefore output of minerals per person has increased rapidly.

In case of agriculture, satisfactory comparable data as to number of workers are not available but after careful consideration of all pertinent data, Dr. Durand estimated that between 1899 and 1925 there had been no appreciable change in number of persons engaged in agricultural production. Output, in the meantime, and therefore approximate output per person, increased by 47 per cent. Exactly the same growth in output per person is shown for manufactures. From 1899 to 1919 there was a much larger growth in output per worker in agriculture than in manufacturing, reflecting important improvements made in the technology of agricultural production, particularly during the second decade of the century, while manufacturing in 1919

was considerably disturbed by postwar readjustments. These events will be more fully discussed later.

Growth of railroad transportation is shown by the large increases in number of employees of railroads and in volume of traffic. These increases were especially large in the first decade of the century, but slackened somewhat in the second decade, and between 1919 and 1925 there was a decrease in number of employees and practically no change in volume of traffic. The growth in traffic volume per worker has continued throughout the period, giving a total increase of 56 per cent, slightly exceeding the increases for agriculture and manufacturing. It has been estimated[2] that in the same period there was an increase of 100 per cent in traffic units per man-hour. Phenomenal improvements have been made in railroad efficiency during recent years by means of unified planning and routing of freight cars, expansion of locomotive tractive power, economies in fuel consumption, and other methods.

Figures for manufactures are available for five-year periods—recently for two-year periods—and are given in Table II and Chart II. They show a steady expansion in manufacture from 1899 to 1925, with some retardation in 1914, a year of moderate depression, and a sharp drop in 1921, a year of extreme depression. The growth in quantity of manufactures produced during this period was at the rate of 4 per cent a year, applying alike to the decade from 1899 to 1909 and to the period following from 1909 to 1925. Increases in horsepower of installed prime movers in factories, in number of persons engaged in manufacture, and in estimated output per person are also shown in Table II and Chart II. In the first decade of the century, output per person increased by about 10 per cent—or at the rate of less than 1 per cent a year. The three succeeding census years were not representative for the various reasons—1914 and 1921 because during industrial recession the quantity of goods produced decreases by a larger amount proportionately than the number of workers retained on payrolls, and consequently output per worker is temporarily reduced, and 1919 because, owing to postwar readjustments, industrial efficiency was at a notoriously low ebb. Output per person in manufacture increased some during that period, but it is probable that the growth was not as large as in other periods. Records for 1923 and 1925, however, reveal a phenomenal expansion during recent years in the productivity of manufactures. In the two years from 1921 to 1923 apparent output per person increased by over 23 per cent and from 1923 to 1925 there was another increase of 11 per cent. From 1909 to 1925 the increase in output per person, which, on the basis of the record, was all brought

[2] *Monthly Labor Review*, March, 1927, p. 1.

about in the last four years of the period, amounted to 34 per cent, or at the rate of 1.8 per cent a year, twice the average annual increase recorded between 1899 and 1909. It is significant furthermore that throughout this period working hours have been reduced. Between 1909 and 1923 there was a reduction of 11 per cent in number of working hours in factories. This would indicate roughly an increase of over 50 per cent in output of manufactures per man-hour since

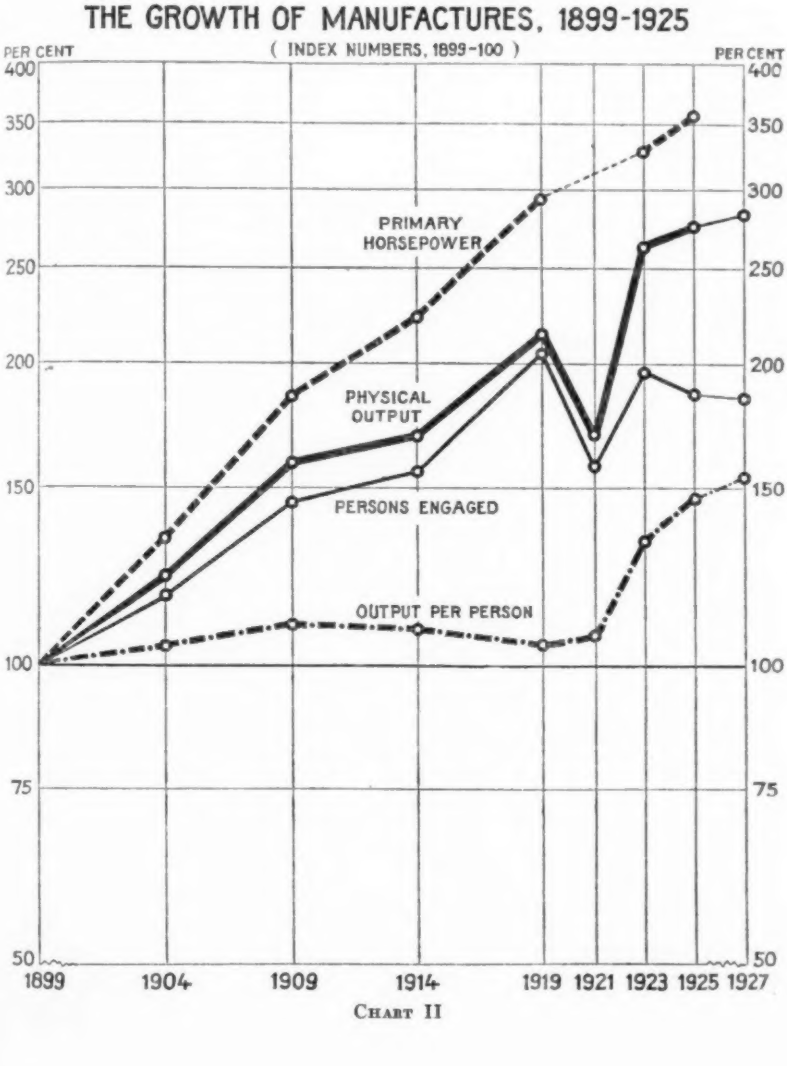

CHART II

TABLE II

GROWTH OF MANUFACTURES, BY CENSUS YEARS, 1899-1925
(Index numbers, 1899 = 100)

	Quantity of output	Number of persons engaged	Output per worker	Primary horsepower installed
1899	100	100	100	100
1904	122	117	104	134
1909	159	145	110	185
1914	169	156	108	222
1919	214	204	104	292
1921	170	158	107	...
1923	261	197	132	330
1925	275	187	147	3[illegible]6
1927 (estimated)	280-3	182-6	151-5	...

1909, and, with a small allowance for some reduction in hours in the previous decade, a probable increase of over 70 per cent since 1899.

Monthly index numbers of production and employment compiled by the Federal Reserve Board indicate that since 1925, the latest year for which census figures are available, the output of manufactures has increased further while the number of employees in factories has continued to decline. As a consequence there probably has been a further growth in output per person—roughly estimated for the two years at between 3 and 5 per cent. This is considerably less than the increases shown in the two previous biennial periods, but apparently the increase is continuing at an annual rate in excess of that shown for the first decade of the century.

Many factors may be cited as accounting for this increase in the productivity of American industry. The various writers on the subject—Dr. Durand through the medium of the *Commerce Yearbook* and the annual report of the Secretary of Commerce, Professor Douglas, Professor Tugwell, and others, foreign as well as American [3]—have given a number of causes, ranging from immigration restrictions and prohibition to scientific management. The most important of these are the advantages possessed by this country in respect to natural resources, physiographical features, population, and political organization. Our vast and diversified natural resources have played an important rôle in this nation's industrial development. It may be said, however, with some force that, although these elements may account

[3] *Commerce Yearbook*, I (1926), 13-24.

Fifteenth Annual Report of the Secretary of Commerce, 1927, pp. XXVII-XXXIV. Paul H. Douglas, "The Modern Technique of Mass Production and Its Relation to Wages," *Proceedings* of the Academy of Political Science in the City of New York, XII, (July, 1927), 3.

Rexford Guy Tugwell, *Industry's Coming of Age.* (New York City: Harcourt, Brace, and Co., 1927.)

for the long-time growth of industry, they do not entirely explain the *recent* rapid increase in output per worker. It is, nevertheless, true that these natural features are basic elements in this increase; they have provided a convenient source not only of raw materials to which machinery has been applied with fruitful results, but as well of the raw materials out of which the machines themselves have been made and the fuel with which to run them. In other words, our vast natural resources have been the basis of our abundant supply of capital in form of productive equipment, which in turn has aided in bringing about the rapid mechanization of industry. At the same time other physical and political features—large population, the diversity of regional demands, and the absence of interregional trade restrictions, such as tariffs—have furnished a domestic market exceeding in magnitude and diversification that of any other industrial nation. The magnitude of the market, the abundance of capital, and the education of American consumers by persistent advertising to accept standardized articles have encouraged the development of mass production, which in turn has permitted a reduction in unit costs.

The growth of large corporations, the resort to mass production, and the movement toward integration of industrial operations in process in this country during recent years are too familiar to require evidence. Census figures show a relatively small increase in the number of manufacturing establishments during the past quarter century and a decrease since the war. Consequently as measured by average value of products, wage-earners, or horsepower per establishment, the size of factories has increased. The proportion of large establishments to the total has also been enlarged. The movement toward consolidation and integration of many establishments under one corporate head is not directly indicated by census statistics. Such combinations have recognized advantages from the standpoint of administration, of procurement of raw materials, and of marketing of products. Large-scale production is especially economical where large quantities of the same products can be produced. The magnitude of our domestic market and the willing acceptance of standardized articles make feasible such repetitive processes.

Large-scale production is dependent upon the machine process, and the increasing use of machinery and power and labor-saving devices has accompanied the growth in size of productive units. The growing use of power in manufacturing, for example, is reflected in the increase in horsepower of installed prime movers, shown in Table II. This does not tell the whole story, moreover, for, owing to increased use of electricity, the type of power used is now more efficient—requiring less fuel and labor for its production. Out of a total installed horsepower

in factories of thirty-six million in 1925, twenty-six million or 72 per cent was transmitted to machines by means of electric motors, as compared with 55 per cent in 1919, 30 per cent in 1909, and only 2 per cent in 1899. Between 1899 and 1925 horsepower per person employed in factories increased by 90 per cent and horsepower per unit of product increased by 30 per cent. Locomotive tractive power per employee of railroads also increased in that period by about 100 per cent. Furthermore, there have been economies in fuel consumption and the introduction of other methods for the more efficient utilization of power.

Power has been substituted for labor not only through machines of production but also in the form of automatic conveying and loading devices. In this connection contributions to progress have also been made by those changes in productive operations introduced by so-called scientific management—the installation of more efficient processes, routing of materials and products, elimination of waste, avoidance or lessening of fatigue on the part of workers, and other devices and methods too detailed and too numerous to mention. In all of these developments American industry has excelled.

Another set of factors, not without importance, in bringing about increased productivity of American industry relates to the wider general education of the population, to advances in scientific research, and to the broader dissemination of information. The number of pupils in schools has increased and the quality of instruction has improved considerably during the last few decades, and at the same time the proportion of illiterates in the population has decreased. It is to be hoped, and expected, that this has been somewhat effective in increasing the capacities of individuals. The organization of research by universities, by privately endowed institutions, and by private enterprise has contributed much toward industrial progress. Within the post-war period the increased collection and use of business statistics and the more thorough analysis of business trends have furthered the advance of industry toward a more intelligent control of forces determining its progress.

All of these factors in American industrial progress are interrelated. Our natural resources, physical magnitude, and large population provide a broad market and the sources of an abundant capital supply. These permit the development of machine production on a large scale, characterized by the repetitive manufacture of standardized articles in establishments scientifically managed from the standpoint of output at lowest possible cost. Expanding educational and research facilities have contributed to improve technology in production, administration, and salesmanship.

Many of these elements in our industrial progress, however, are not

forces which have only recently become effective. We have had natural resources, internal free trade, and a fairly wide domestic market during most of our industrial history; we had them, certainly, in the period from 1909 to 1921, when productivity per person in manufacturing failed to gain. The phenomenal increase in manufacturing efficiency has apparently come since 1921. It is worth while to consider the forces that have caused this recent sudden spurt.

In the first place, as pointed out previously, the apparent changes are due partly to faults in our statistics. The years 1914, 1919, and 1921 are not typical; there was probably some increase during that period which would be shown were data available for intervening years. Then the war considerably disturbed industrial technique and delayed progress for a period, but at the same time new technological processes and methods were learned as a result of war experiences, and what is perhaps of equal value, the importance of co-operation and of having adequate and accurate knowledge of developments was impressed upon the business community. The leaders of industry were also the leaders of that vast co-operative organization by which the war was carried on, and in that experience they learned that much could be gained by joint effort toward an end. In a number of cases old theories regarding the beneficient influence of free competition were found wanting. The excellent co-operation shown by the railroads in recent years in delegating to the Car Service Division of the American Railway Association almost autocratic power in routing freight cars has been one of the most effective elements in the recent improvements in the efficiency of railway operations. During the war, furthermore, plant capacities were increased considerably, in most cases with modern equipment. As a result, complaints are still heard of the excess capacity of industry—overcapitalization in a physical sense although perhaps not in a financial sense because much of the cost of installation was charged off during and immediately after the war. The cumulative effect of these factors—and of others such as the increased literacy of the population, expansion in available information, prohibition, and curtailed immigration during the war—was further delayed by the industrial depression of 1921. During this depression, however, plants were reorganized, excess capitalization reduced, inventories diminished, inefficient workmen discharged, and costs of operation lowered. Thus was inaugurated the recent pronounced movement toward increasing productivity, and the cumulative force of all of the factors working toward that end became at once effective. Immigration restrictions and prohibition, which became operative about that time, may also have been factors.

Abundance of investment funds at reasonable rates was also an important contributing element. This made it easy to purchase ma-

chinery, to expand plants, where necessary, to substitute new and more economical equipment for obsolete or obsolescent equipment, and to experiment with new processes and products. I venture the assertion that one of the most important factors in the growth of American industry, particularly in the past five years, but also in earlier periods, has been the boldness exhibited by the American business man in scrapping old equipment and methods and trying new ones, and the ease with which he has been able to obtain funds to finance these operations.

One of the most significant influences in increasing the productivity of industry as a whole has been the shifting importance of the individual industries that make up the industrial structure. This development is seen in the rise of new industries which rely chiefly upon the machine process or which make products that contribute to the saving of time and labor, and the decadence of old industries that are inefficient as measured by output per worker or ability to enlarge output per worker. The growth of these new industries thus causes a larger expansion in the total output of industry than in the number of workers employed, and contributes to the increasing output per worker of industry as a whole.

The rise of the petroleum industry is an excellent example of such a development. It was explained above how the output of minerals per worker has increased so rapidly, owing to the increase in petroleum production.[4] Other examples of similar shifts are seen in the substitution of cement for brick, stone, and lumber in building construction and of baker's bread for the homemade product, and in the growth of the automobile industry and of those other industries which contribute to the increasing use of mechanical contrivances in all phases of our lives. These new industries grow rapidly with increases in consumer purchasing power and the effect of their growth is cumulative. These developments have probably been a most important cause of the recent sharp rise in industrial efficiency. Their further significance will be discussed later.

It has been shown that phenomenal expansion has occurred in output per person engaged in American industry, and some of the more important causes of this expansion have been described. Such changes have had important consequences in respect to national well being.

[4] Separate figures for petroleum and for mining exclusive of petroleum are shown at the foot of Table I. The number of workers, as well as output, has increased much more rapidly in the petroleum industry than in other mining industries. Output of petroleum per worker has not shown a particularly large gain, but the value of product per worker has always been much greater in this than in other mining industries. When output is greatly increased, even without an increase in production per worker in the industry which has the greatest value of output per worker, the average production per worker of all industries is raised. See also footnote [b] Table I.

Most of these consequences we should probably call "good," but others present economic and social problems for which there are no easy solutions.

In the first place, as was stated in the beginning of this paper, production per capita of population has been enlarged, as well as output per worker engaged directly in production. For the four branches of industry included in Dr. Durand's index, the increase in per capita output, for the entire population, in the first quarter of this century amounted to 55 per cent. The four branches of industry included cover the production of basic products; the omitted phases of economic activity relate to the further processing of those products and their distribution to ultimate consumers—building construction, wholesale and retail trade, communication, and provisions for recreation and diversion. Estimates made by the National Bureau of Economic Research for a more recent period show that there have also been increases in total income per capita, indicating that income from sources not included in the index has likewise expanded.

Growth in production per person employed and in national income per capita of population indicates broadened standards of living for the inhabitants of the nation, depending, of course, upon the distribution of this income by economic classes. Analysis of growth of production with reference to the type of goods in which increases have been large indicate that a large part of the inhabitants of the nation have probably benefited by the increased productivity of industry.

Analysis of the growth of manufactures made by Dr. Edmund E. Day in a census monograph [5] now being printed reveals certain significant features of the industrial progress of the past quarter century, which indicate far-reaching changes in methods of production and habits of consumption.

(1) The most striking increases shown have occurred in those industries manufacturing goods which are devoted to recreation and diversion or which have brought about radical changes in manners of living—in many cases so-called luxury goods, that have become, in fact, necessities. Familiar examples, in which percentages of increase run into four or five figures, are the automobile and its related products—gasoline and tires—phonographs, photographic equipment and supplies (including moving pictures), silk goods, confectionery, ice cream, cigarettes, and, in recent years, rayon and radios.

(2) The second group of industries showing outstanding increases are those making so-called producers' goods—industrial machinery and equipment, manufactured fuels, and materials for further production. Examples are iron and steel, nonferrous metals, machinery, petroleum

[5] Day and Thomas, *The Growth of Manufactures*, Bureau of the Census.

refining, and by-product coke. The expansion of these industries reflects the increasing mechanization of production which has taken place in nearly all industries and which has been such an important factor in improving productivity.

(3) A set of industries which have expanded rapidly are those that provide labor-saving devices for office and home as well as for the factory—electrical appliances, typewriters, calculating machines, cash registers, heating apparatus, and, to some extent, automobiles as well. These are something of a cross between the two groups mentioned in that they are producers' goods which have contributed to changes in living habits and in some cases are also considered as luxuries.

(4) The substitution of newly discovered or developed products for old ones has resulted in some important changes in industrial arrangements, in the rapid expansion of new industries and the decadence of old, formerly well-established industries. Some examples of such industrial conflicts are cement, metals, and tile vs. brick and lumber in building construction; paper boxes vs. wooden boxes for packing and shipping; by-product coke vs. beehive coke; automobiles vs. carriages, wagons, and bicycles, and cigarettes vs. cigars. In most cases these new products can either be produced more efficiently or in their utilization are more economical of time or labor.

(5) Production of staple articles of consumption has shown little increase beyond that needed to care for the growth of population. An appreciable increase in consumption of the staples of food and clothing is not to be expected—in fact it is undoubtedly true that the clothing requirements for women, measured in bulk per capita, have diminished considerably during the last quarter century. The production of flour per capita has apparently decreased since the beginning of the century and the output of leather and products has about kept pace with the increase in population.

(6) The character of goods consumed and the methods of producing consumers' goods have changed, however, for in a number of cases production has been transferred from the home to the factory and the output of certain manufactured consumption goods has increased. Outstanding examples are manufactured dairy products, canning and preserving, and the manufacture of millinery goods. Dr. Day has written in the mongraph, previously cited:

"Fresh milk and fresh vegetables are about the only staple articles of food which now, in general, reach the consumer without being fashioned in some measure in the factory. As for the other goods we consume—our meat, sugar, flour, our clothing, our household conveniences, our means of recreation, not to mention the more complex instruments of communica-

tion and transportation upon which our modern life depends so vitally—all are in some measure factory products."[6]

This mechanization of production of goods in everyday use has resulted in the saving of much time and effort to individual members of society.

(7) As a consequence of these changes, during the past quarter of a century, industry has become less dependent upon farms and forests as sources for raw materials, while the use of minerals has increased. Witness the growth of industries in the metals and chemicals groups as contrasted with those in the food, textile, leather, and lumber groups. The reasons for this change, as previously indicated, lie chiefly in the growing mechanization of industry and in the relatively static character of the demand for staple products of food and clothing, which are largely derived from agricultural materials.

This, in brief, is what has taken place in industry. Certain industries have grown; others have failed to grow beyond the rate of population expansion, while production of industry as a whole has increased at a far more rapid rate than population. This growth in production per capita has meant increased purchasing power for the consumer which has been used not to buy an additional amount of staple articles of food and clothing but has been expended upon new products and services of various sorts, chiefly those which provide recreation and diversion, which supply labor- and time-saving devices, or which for some reason are, in the opinion of the consumer, more beautiful or more serviceable. Witness the increase in the production of automobiles, gasoline, radios, phonographs, vacuum cleaners, electric cooking and heating devices, the growing expenditure of time and money on motion pictures, dance halls, and athletic events, and the substitution of silk and rayon for cotton and wool, of baker's bread for the homemade product, of automobiles for carriages. The wide distribution of these products, formerly considered as luxuries but now of everyday use, indicate that a large portion of the population has shared in this broadening of living standards.

As a result of these developments, there have been many other significant events in recent industrial history. New industries have risen and many old ones have expanded rapidly, and where the new products have been more economical substitutes for old products, established industries have consequently suffered. In the majority of cases, however, new products have filled previously unsatisfied needs or have developed new needs by providing means for broadened living conditions. One of the outstanding characteristics of the newly developed industries is that they have generally contributed to the further mechanization

[6] *Ibid.*

of life and work. In this way they have enlarged the capacity of the nation both to produce and to consume. Mechanization, large-scale production, high-powered advertising and salesmanship, and the payment of adequate wages have made it possible to produce and to sell more products at lower prices. Surveys of conditions in industry with a view to determining what further improvements can be made indicate that even more phenomenal economies of operation and increases in productivity may be brought about by the broader application of known methods and standards, not to mention the effects of new inventions and discoveries which are constantly being made.

It seems clear that consumers will continue to demand new products and that the manufacture of these new products will require new machines and equipment. Two types of industries, therefore, are most likely to expand: (1) those which provide the consumer with innovations, especially of the semidurable type that serve as economizers of time and labor or provide diversion, and (2) those which furnish equipment and materials for making these products. It is necessary generally to convince the consumer that the product is new or will serve the required purposes, and in this respect advertising and sales strategy play their rôles. Sometimes, in fact, by means of these agents, skillfully applied, an old product can be given a new standing without any material change in form or serviceability.

Somewhat less favorable is the story of agriculture. Despite the contrast between the unchanging output of agricultural products per capita of population and the phenomenal expansion of output in other branches of industry, there are complaints of a chronic surplus of agricultural commodities. Professor Carver in his presidential address at the annual meeting of the American Farm Economic Association a year ago pointed out that the "demand for the great staple products of agriculture seems to have about reached the limit of its expansion except as population increases. . . . . The inability to expand the demand for these products seems to be in part the result of the general prosperity of the people, permitting them all to consume such staple products as wheat, potatoes, beef, pork, and cotton about up to their per capita capacity. Accordingly as they increase their prosperity they do not buy any more per capita of these things but spend their surplus upon a great variety of cheap luxuries, ranging all the way from automobiles to chewing gum." [7] At the same time the product per worker in agriculture has enormously increased, thus enlarging the productive capacity of American farms.

The tendency, previously noted, for new products, more efficiently produced or in other ways more salable, to be substituted for old ones

[7] *Journal of Farm Economics*, January, 1927.

has also affected the demand for staple farm products. Industry has developed ways of utilizing products of the farm formerly wasted and the derived goods provide more economical substitutes for other farm products. An example is the use of cottonseed as a source of oils and fats; local creameries and canneries have eliminated much waste; prepared foodstuffs, such as breakfast foods, are made largely from by-products; and the manufacture of rayon from materials formerly wasted provides a popular substitute for cotton and wool. Silk furnished a somewhat different case of competition with farm products; in this case a more expensive import commodity, with increasing purchasing power of consumers, has been substituted for the cheaper, less attractive domestic staples—cotton and wool.

Except in the case of silk, of rayon made of wood-pulp, and of other articles made from materials not grown on American farms, the farmers, to be sure, have made some gain from the increasing utilization of their waste products, but most of the gain has gone to the processors for making the products available for use, and it is doubtful that the farmers' gain from the growing demand for the new product offsets their loss from the decreasing demand for the old product for which the new one is substituted.

One of the striking features of the economic situation in this country during recent years has been the high level at which industrial profits have been maintained during a period of falling prices for nonagricultural products and of fixed or advancing wage rates. Dr. David Friday in discussing this situation has pointed out that since 1923 industrial profits[8] have increased from 5.6 billion dollars in 1923 to 6 billion in 1925, 6.6 billion in 1926, and about 6 billion in 1927, while the index of prices of nonagricultural commodities in the Bureau of Labor Statistics index declined from a yearly average of 164 per cent of the 1913 average for 1923 to yearly averages of 158 in 1925 and 154 in 1926, and to a low point for the postwar period of 144 in the summer of 1927. In the meantime average wages earned per worker have increased. It appears that during the past five years, corporations, by means of increased productivity and the exercise of other economies, have been able to increase output, reduce prices, maintain wages, and expand profits.

It is impossible in so brief a paper adequately to discuss or even to suggest all the consequences of this Twentieth Century industrial revolution. I have not discussed, for example, the effect upon wages. The picture as I have presented it appears on the whole to be a bright one.

[8] Profits of manufacturing and mining corporations as reported in *Statistics of Income*, compiled by the Treasury Department, after allowing for interest paid and before allowing for depreciation and for income taxes paid. Figures for 1926 and 1927 are Doctor Friday's estimates.

There are other social and economic consequences which might be considered favorable—the extra amount of leisure permitted by increased output per person, the opportunity to enjoy a more diversified existence, the longer time permitted to be spent on education, as evidenced by the rapid increase of students in our schools and colleges, the lessening of the drudgery of the housewife, the proposal and partial inauguration of a five-day work week, and so one might continue to enumerate such results.

On the other hand, a multitude of problems of a social and economic nature are presented by these changes—localities dependent upon an industry suffer as a result of the decline of that industry in competition with new products; in the struggle of producers to profit from the expanding consumer's market, vast sums are wasted in competitive advertising of almost identical products; it is held by some that too much of the increased purchasing power and leisure gained by the people of the nation is spent upon buying and using automobiles, radios, movies, silk stockings, cosmetics, bootleg liquor, and sensational journals, and not enough upon adequate homes, wholesome food, healthful outings and recreation, and good drama and literature.

What shall be done about the excess of workers on the farms? On the other hand, there are a whole set of new social and economic problems which have already been raised by the rapid growth of our cities. With increasing mechanization, it is claimed that the task of the worker has become depressingly monotonous. Will the increase in purchasing power and leisure which may be granted him offset this disadvantage? What will be the effect of standardization of consumption upon the artistic values of consumers? There are also questions in connection with the effect of changes in production upon prosperity and depression. In the complex industrial system which has grown up can consumers' desires be forecasted—or controlled—so as to avoid serious maladjustments in the type and quantity of goods produced? Will further increases in productivity permit the continuation of declining industrial prices? Or have falling prices and competition so far narrowed margins of profit that the position of many business establishments is becoming precarious?

On the whole we have profited by the increasing productivity of our industry, but prosperity should not prevent us from recognizing that each step in the march of progress brings us face to face with new problems whose solution will require all the knowledge we can muster and all the wisdom we possess.

A THEORY OF PRODUCTION[1]

By

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1. *Introduction.*—The progressive refinement during the recent years in the measurement of the volume of physical production in manufacturing suggests the possibility of attempting (1) to measure the changes in the amount of labor and capital which have been used to turn out this volume of goods, and (2) to determine what relationships existed between the three factors of labor, capital, and product.

If the relative supply from year to year of labor and capital were thus even approximately ascertained, a number of further problems would inevitably present themselves for solution of which the following are typical. (1) Can we estimate, within limits, whether this increase in production was purely fortuitous, whether it was primarily caused by technique, and the degree, if any, to which it responded to changes in the quantity of labor and capital?

(2) May it be possible to determine, again within limits, the *relative* influence upon production of labor as compared with capital?

(3) As the proportions of labor to capital changed from year to year, may it be possible to deduce the relative amount added to the total physical product by each unit of labor and capital and what is more important still by the *final* units of labor and capital in these respective years?

Might at least an historical approach to the theories of decreasing imputed productivity (diminishing increment to total product) be afforded and the way opened for further attempts to secure quantitative approximations to these assumed tendencies, if indeed there should turn out to be historical validity to them?

(4) Can we measure the probable slopes of the curves of incremental product which are imputed to labor and to capital and thus give greater definiteness to what is at present purely an hypothesis with no quantitative values attached?

(5) Finally from such a study of (a) the imputed physical product from year to year of a unit of labor and capital when joined with (b) a study of the relative exchange value of a physical unit of manufactured goods in these years and compared with (c) the actual movement of "real" wages in manufacturing and of real interest (if the latter can be ascertained), may we secure light upon the question as

[1] Mr. Douglas has been responsible for sections 1-5 and 8-10, of this paper and Mr. Cobb for sections 6 and 7.

to whether or not the processes of distribution are modeled at all closely upon those of the production of values?

The paper which follows attempts to deal with these questions and to throw some light upon them. But before this is done, it is of course necessary to construct indexes of the relative amounts of labor and capital which have been used and it is this which is dealt with in the two succeeding sections, leaving the later sections for the treatment of the interrelationships which may be discovered.

2. *The Growth of Fixed Capital in Manufacturing in the United States, 1899-1922.*—The census of manufactures has periodically included a question on the amount of capital invested in the various manufacturing enterprises and has tabulated the returns. This, however, includes in addition to fixed capital in the form of machinery and buildings, working capital including raw materials, goods in process of manufacture and finished goods in warehouses. It also includes land. Since we are attempting to measure the capital which aids in the production of goods, we should exclude working capital, for this is the result and not a cause of the process of manufacture.[2] We should also exclude land values since these are largely composed of the unearned increment. We shall therefore attempt to measure the changes in the physical quantity of (1) machinery, tools, and equipment and (2) factory buildings.

Unfortunately while statistics of total capital are given virtually every census year, they were only segregated for these specific groups in 1889, 1899, and 1904.[3] The Census Bureau in its 1922 report on *Wealth, Public Debt and Taxation* estimated that manufacturing machinery, tools, and equipment formed 30 per cent of the total amount of manufacturing capital.[4] Since it set the latter at 52,610 millions, this would give a figure for machinery, etc., of 15,783 million.

Year	Value of Factory Buildings (in millions of dollars)	Percentage of Manufacturing Capital	Value of Machinery, Implements and Equipment (in millions of dollars)	Percentage of Total Manufacturing Capital
1889	879	13.4	1,584	24.3
1899	1,450	14.8	2,543	25.9
1904	1,996	15.8	3,490	27.5
1922			15,783	30.0[5]

[2] Working capital of course normally "produces" value for its owner but we are here not concerned with value but with physical production.

[3] See *13th Census* (1900), VI, xcvii, and the *Census of Manufactures*, 1904, Part I, pp. lxiv-lxv.

[4] Bureau of the Census, Estimated National Wealth (1925), pp. 9-10.

[5] Estimate of the Census Bureau.

The amounts which have thus been ascribed to each of these forms of capital and the percentages which they formed of total capital for the given years were as shown on page 140.

These statistics furnish a basis for estimating the probable value of these forms of manufacturing capital in those years when no such segregation of items was carried out. Not only was the total amount of capital increasing but fixed capital was coming to form a larger percentage of this greater sum.

It seems undeniable that buildings and machinery did not increase as rapidly in comparison with working capital during the eighties as they did during the fifteen years which followed 1889 when buildings advanced from 13.4 to 15.8 per cent, or an increase of 2.4 points, and machinery, etc., from 24.3 to 27.5, or a gain of 3.2 points. This was an advance of .16 and .21 points a year, respectively. We have assumed the growth in the proportions which buildings formed of the total was at approximately only one-quarter of the rate of speed of the nineties and for machinery at only one-fifth. This would give 13.0 per cent as the probable figure for buildings in 1879 and 24.0 per cent as that for machinery, tools, and equipment.

If we accept the census estimate of 30 per cent as the proportion which machinery formed of the total in the terminal year of 1922, we may then distribute the 2.5 per cent increase from 27.5 per cent in 1904, according to a fairly even ratio. The rate of growth from 1914 on was, however, undoubtedly somewhat more rapid than during the previous decade and allowance should be made for this fact.

The growth in the relative importance of buildings since 1904 is more problematical since we have no end value on which to build. While the absolute increases have been enormous, it has not seemed to us that the relative importance of buildings in comparison with other forms of capital has advanced at the same rate as during the years 1889-1904. Because of this and the results of a Missouri investigation, we have estimated the percentage at 16.5 for 1922 and have distributed this over the preceding years but providing for a more rapid growth after 1914 than before. Table I gives the estimated percentage of each of these forms of manufacturing capital in the various years and the amounts in terms of dollars.

There is some evidence to indicate that the estimated total for buildings and machinery at 46.5 per cent is not far from correct. Thus the Missouri State Bureau of Labor Statistics shows that in 1923, 334.7 millions were invested in that state in manufacturing buildings, machinery, etc., and 58.7 millions in "grounds."[6] The amount of the working capital is not given but this was set for the country as a

[6] *Forty-fourth Annual Report Missouri Bureau of Labor* (1923), p. 155.

whole by the Federal Trade Commission at 45.7 per cent of the total capital.[7] Since this is based upon the returns of 54,862 corporations with a total capital of 33.65 billions, it may be accepted as the best nation-wide estimate which we have. If we apply this ratio to Missouri, we would get 331.1 millions or a total with other items of 724.6 millions. Now buildings, machinery, and equipment were, as stated, evaluated independently by the Missouri study at 334.7 millions and this would be 46.2 per cent of the total. This is in almost exact agreement with the estimate of 46.5 per cent which we have made for these forms of capital in 1922. Since the types of manufacturing in Missouri are not unrepresentative[8] of conditions in the country as a whole, our estimate can be considered to be buttressed and until better statistics are collected to be probably the best which can be made.

Table I

Estimated Values of Manufacturing Buildings and Machinery, Tools and Equipment and Percentages Which They Formed of Total Manufacturing Capital, 1879–1922

Year	Percentage of Total Manufacturing Capital		Value in Millions of Dollars		
	Buildings	Machinery and Equipment	Buildings	Machinery and Equipment	Total
1879..........	13.0	24.0	363	670	1,033
1889..........	13.4	24.3	879	1,584	2,463
1899..........	14.8	25.9	1,450	2,543	3,993
1904..........	15.8	27.5	1,996	3,490	5,486
1909..........	16.0	28.1	2,948	5,178	8,126
1914..........	16.2	28.7	3,692	6,541	10,233
1919..........	16.4	29.5	7,293	13,118	20,411
1922..........	16.5	30.0	8,681	15,783	24,464

There remains however the natural query as to what these census returns mean and how much the original data are worth. In recent years, the Census Bureau has instructed its agents to see that these statistics be taken "at the amounts carried on the books." Does this book value then mean the original cost of the buildings, machinery, etc., or the cost of reproduction? Mr. La Verne Beals, the chief statistician for manufactures, who is probably the ablest expert in this general field, has stated[9] that the "manufacturers have as a rule reported capital on the basis of original cost rather than cost of reproduction."

[7] Federal Trade Commission, *National Wealth and Income*, p. 135. (Senate Doc. 126, 69th Congress, 1st Session.)

[8] Thus while Missouri does not have any textile industries and but a small clothing industry, it does have a considerable amount of capital invested in printing, foundries, automobile manufacture, meat packing, smelting, and brick and lime works. There is also a fast growing shoe industry.

[9] Letter to author, October 23, 1925.

It is true that the Census Bureau has frequently issued cautions against accepting too implicitly its total for manufacturing capital and has indeed omitted such a question from its schedule for the 1921, 1923, and 1925 censuses. But, if the difficulties created by the fact that the investments are computed in terms of the price levels of the different years in which they were originally made can be overcome, and if the capital index can then be reduced to dollars of constant purchasing power, there would then seem to be no good reason why the resulting data should not be taken as a fairly accurate index of the *relative growth* of fixed capital, if not of its absolute amount. Moreover the proper correction of the distortions produced by changing price levels would remove most of the objections which can be leveled against such figures as a measurement of the total amount of capital. There remain two further problems before we can construct a continuous and comparable index: (1) finding the probable increments in each of the intervening years and (2) reducing these various increments of savings in terms of the value of a common price level.

Since the statistics are based upon original cost, the first problem consists in finding the annual increments of capital in terms of the prices of that year and of adding these to the values of the preceding year. The method followed was, in brief: (1) To ascertain the quantities of the following commodities produced in each year from 1899-1922: pig iron, rolled and forged steel, lumber, coke, cement, bricks and copper.[10] It will be noted that these commodities are the most important of those which are used in the construction of machinery and of buildings. In those few cases where it was impossible to secure actual figures of production for a given year, these were estimated from other years on the basis of the relative change in Professor Day's index of physical production for that group of manufactured products in which the commodity in question was included.[11] For the period 1880-1889, the quantities of pig iron, steel, cement, copper and coke were used. (2) The quantity produced of each commodity in each year was multiplied by its current price per unit of product.[12] The prices for the period from 1890-1922 were those collected and published by the United States Bureau of Labor Statistics[13] while those used for the decade from 1880-1890 were those published in the reports of the

[10] The raw data were secured from the United States Statistical Abstract for the various years. Also *Mineral Resources of the United States* 1921 Part I, pp. 235-82; 565-98; Part II, pp. 371-440.

[11] E. E. Day, "An Index of the Physical Volume of Production," *Review of Economic Statistics*, Vol. II (1920) pp. 328-29. Day, "The Physical Volume of Production in the United States for 1923." Ibid. Vol. VI (1924) p. 201.

[12] The average of the prices of spruce and maple was used for lumber.

[13] Bulletin 335 of the United States Bureau of Labor Statistics, *Wholesale Prices, 1890-1922*, pp. 126-56.

Aldrich Committee.[14] In some cases, it was possible directly to derive the value of the total product without multiplying the physical product by the price per unit and wherever this was the case the directly quoted total was used. (3) The values of each commodity produced in a given year were then added together to obtain the total values of these producers goods turned out in each year. (4) The values of these capital goods which were produced between two census years were then totaled (e.g., 1880 to 1889 inclusive) and the value for each year was divided by the total for the period in order to get the percentage which it formed of the total value produced during the period as a whole. These percentages were then applied to the total increase in the value of buildings and machinery over the same period and estimated yearly increases in the value of these items were thus obtained.

This process may be illustrated by the following example. The increase in the value of buildings and machinery between 1879 and 1889 was 1430 millions. The total money values in each of the years of these capital goods and the per cent which each of these yearly totals formed of the total for the period were as follows:

Year	Value of Specified Capital Goods (in millions of dollars)	Percent of Total Value for Decade
1880	200	9.6
1881	210	10.0
1882	216	10.3
1883	184	8.8
1884	148	7.1
1885	141	6.7
1886	211	10.0
1887	282	13.5
1888	241	11.5
1889	263	12.5
Total	2,096	100.0

The increase in the value of buildings and machinery during the decade, 1430 millions, was then multiplied by each of these percentages and the probable amounts of the yearly increases in value were obtained. These amounts when totaled and added to the total for 1879 would of necessity equal the 1889 value. The basic assumption is of course that the capital values in terms of original cost grew from year to year as the money value of the capital goods produced.

But since these estimated additions to capital are reckoned in terms of the dollars of the given years, if we are to secure an index of rela-

[14] *Report of Senate Committee on Whole Prices, on Wages and on Transportation*, Appendix A. The criticisms of the index of prices do not apply here since the absolute prices quoted were used.

tive real capital, it is necessary to eliminate the effect of changing price levels. A capital cost index was accordingly computed which was based on three sets of relative prices: (1) the wholesale prices of metals and metal products, (2) the wholesale prices of building materials and (3) money wages. The Aldrich Committee report was used to obtain prices for the first two groups of products from 1880 to 1889[15] while the indexes of the Bureau of Labor Statistics were used for the years 1890 to 1922.[16] For wages, the index previously computed by one of the authors was used for the period from 1890 on[17] while the average wages computed by Dr. R. P. Falkner for the Aldrich report were taken to show the movement during the eighties. These three series were then reduced to relatives with 1880 serving as 100 and were

TABLE II

ESTIMATED ANNUAL ADDITIONS TO FIXED CAPITAL IN MANUFACTURING TOGETHER WITH CUMULATIVE TOTAL CAPITAL AS EXPRESSED IN TERMS OF COST AND 1880 PRICES (Millions of dollars), 1899–1922

Year	Annual Increase in Terms of Cost Price (1)	Cost Index (1880=100) (2)	Annual Increase in Terms of 1880 dollars (3)	Total Fixed Capital in 1880 dollars (4)	Relative Total Capital 1899=100 (5)
1899	339	88	387	4449	100
1900	264	89	297	4746	107
1901	277	88	315	5061	114
1902	342	89	383	5444	122
1903	328	91	362	5806	131
1904	282	87	326	6132	138
1905	457	92	494	6626	149
1906	612	100	611	7237	163
1907	629	106	595	7832	176
1908	373	94	397	8229	185
1909	569	96	591	8820	198
1910	422	100	420	9240	208
1911	379	99	384	9624	216
1912	457	103	443	10067	226
1913	497	110	453	10520	236
1914	356	101	353	10873	244
1915	1017	105	967	11840	266
1916	1899	135	1402	13242	298
1917	2891	173	1673	14915	335
1918	2473	183	1350	16265	366
1919	1898	196	969	17234	387
1920	2096	237	884	18118	407
1921	780	184	424	18542	417
1922	1177	181	650	19192	431

[15] *Report of Senate Committee on Wholesale Prices*, etc., pp. 92-99. The celebrated twenty-five varieties of jack-knives were subtracted from the metal index before using it.

[16] Bulletin 335, *Wholesale Prices*, 1890-1922, pp. 8-9.

[17] Paul H. Douglas, "The Recent Movement of Real Wages and Its Economic Significance." Supplement, *American Economic Review*, March, 1926, p. 80.

combined into a weighted average. The weights used were metals and metal products, 4; building materials, 2; and wages, 3.

Each yearly increase in the value of manufacturing buildings and machinery was then divided by the relative cost index for that year and a series of "deflated" increases were thus obtained, or rather a series of increases which were expressed in terms of the 1880 price level for capital goods. The next and final step was to add these deflated yearly increases to the estimated total for buildings and machinery for 1879 and thereafter to the total for each preceding year. Table 2 shows all this material. Since our other data only extend from 1899-1922, the years prior to 1899 are omitted from this table. Values given are in millions of dollars.

The index is defective in that it does not allow for the replacement of original capital at differing price levels. The census statistics of book value, undoubtedly include replacements made at different and generally higher prices than those which prevailed when the original capital was invested. Consequently the advance from year to year is not solely the result of the saving of additional increments of capital but includes in part the replacement at other price levels of the old capital as it wore out. The consequence is that our index is throughout most of its course somewhat higher than it should be. It is hoped to publish a revision of this index in the not distant future in which this error will be eliminated. In the meantime this is offered as a first approximation.

The index does not of course measure the short-time fluctuations in the amount of capital used. Thus, no allowance is made for the capital which is allowed to be idle during periods of business depression nor for the greater than normal intensity of use in the form of second shifts, etc., which characterizes the periods of prosperity.

The validity of this index of growth is somewhat strengthened, however, when we compare the increase in terms of book value which we have estimated for the United States[18] during the years 1910-1920 with

Year	Massachusetts (Total Capital)	Estimated for United States (Fixed Capital)
1911	105	104
1912	110	110
1913	113	116
1914	130	120
1915	130	132
1916	150	154
1917	188	188
1918	210	217
1919	248	239
1920	250	263

[18] This column was omitted from Table II because of lack of space.

the growth of total capital in Massachusetts when computed upon a similar basis.[19] Using 1910 as a base, the relative increases were as shown on page 146.

The coincidence between these two indexes is very striking and this becomes even more the case when we remember that most of the greater increase shown for the United States as a whole was due to the fact that the fixed capital was increasing at a more rapid rate than was the supply of total capital in manufacturing.

It may be remarked that this index shows a truly unprecedented growth in the volume of fixed capital. Thus the amount virtually doubled during the decade from 1899-1909. This was a compounded average yearly rate of increase of 7 per cent. This same rate of increase was virtually maintained during the succeeding decade. From 1919 on the rate of growth slackened during the three succeeding years but while we have not computed the growth since 1922 it has beyond question increased greatly since then. Taken as a whole this period showed an approximate doubling in the quantity during every decade, which would probably be scaled down to about 6 per cent per year compounded if deductions were made for the increased cost of replacing the old capital. This is a rate of growth which it is believed has not been matched by any other country.[20] It will be remembered that Cassel estimates the rate of growth of capital in Western Europe at 3 per cent a year. If this is true, the rate of industrial capital growth in the United States has been twice as great while if the growth be reckoned on a per capita basis, the disparity is even greater.

3. *The Growth in the Labor Supply, 1899-1922.*—The various censuses of manufactures give the average number of wage-earners employed in each of the census years.[21] Using these as the bases, we can find the probable numbers employed in the intercensus years by using an index of relative employment. This index was constructed for the years 1899-1904 by combining statistics of the relative number employed from year to year in Massachusetts[22] and Pennsylvania.[23] From 1904 to 1914, figures for New Jersey[24] were substituted for those of Pennsylvania. In both periods, the relative index for each state was then weighted by the number shown by the census to be employed in that state at the beginning of the period and a combined index was

[19] See Annual reports of Massachusetts Bureau of Statistics, *Statistics of Manufactures*, 1910-20.

[20] Our index shows a more than doubling from 1879 to 1899 and an increase of approximately 90 per cent during the nineties.

[21] I.e. namely 1899, 1904, 1909, 1914, 1919, and 1921.

[22] See Annual reports on *Statistics of Manufactures, Massachusetts*, 1900-1905.

[23] See Reports Pennsylvania State Department of Internal Affairs.

[24] Annual volume of New Jersey Bureau of Labor and Industries, *Statistics of Manufactures* (1904-1914).

thus secured. The assumption was then made that the volume of employment of the country as a whole followed a similar course to that in these two states. When the rate of change in these two states differed over a census period from the country-wide figures, then it was assumed that this greater or less degree of change had been distributed evenly over the intervening years, and the percentage changes for the two states were scaled down or up to conform to this standard.[25] Thus the increase in the number employed in 1904 over 1899 was as shown by the Census 1,066,000, or 21 per cent. If the increase shown for Massachusetts and New Jersey was 24 per cent, then it was assumed that the differences between the rate of growth for the country and for the two states increased annually at the rate of one-fifth of 3 per cent or .6 per cent. Then if the increase shown in Massachusetts and New Jersey for 1900 over 1899 was 4.6 per cent, this was scaled down to 4.0 per cent. Similar methods were used for the subsequent years.

From 1914 to 1919 the index was secured by combining that of the Bureau of Labor Statistics[26] for a number of industries with that for New York. In doing this, the Bureau's index was given a weight of 3 and that of New York a weight of 1.[27] From 1919 on, the index of the Federal Reserve Board was used which in turn was largely based upon the index of the Bureau of Labor Statistics. A substantially similar method was used to find the probable number employed in each

TABLE III

THE PROBABLE AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED IN MANUFACTURING 1899–1922

Year	Average Number Employed (in thousands)	Relative Number (1899=100)	Year	Average Number Employed (in thousands)	Relative Number (1899=100)
1899	4713	100	1911	6855	145
1900	4968	105	1912	7167	152
1901	5184	110	1913	7277	154
1902	5554	118	1914	7026	149
1903	5784	123	1915	7269	154
1904	5468	116	1916	8601	182
1905	5906	125	1917	9218	196
1906	6251	133	1918	9446	200
1907	6483	138	1919	9096	193
1908	5714	121	1920	9110	193
1909	6615	140	1921	6947	147
1910	6807	144	1922	7602	161

[25] This is the identical method which I have followed in interpolating average annual earnings in the intercensal years from the statistics of earnings of the various states.

[26] See files of *Monthly Labor Review*.

[27] See New York *Labor Market Bulletin*.

of the intercensal years up to and including 1922.[28] Table III gives these estimated numbers from 1899 on and also expresses them in terms of relatives.

This index is defective in a number of respects as a perfect measure of the working force. (1) It does not include clerical employees who have been increasing in number at approximately double the rate of the wage-earners. (2) It is based on man-years rather than "standard" man hours. The average number of hours constituting the standard week's work has declined during this period, so that an increase in the number of men would be necessary merely to offset this decrease. One of the authors has computed a tentative index of standard man hours by multiplying the number of workers in each year by the average number of hours in the "normal" week. There is reason to believe, however, that this index is not yet perfected and so man-years have been used instead. It is hoped to include total "standard" hours in later studies. (3) It does not measure deviations from this standard week whether they take the form of short-time in periods of depression or overtime in the years of prosperity.

Such an index of course makes no allowance for possible changes in the quality of the laborers or in the intensity of their work. These factors may be of considerable importance but at present they certainly cannot be measured quantitatively and until they can be, it is better for any statistical study to ignore them than to make necessarily fantastic estimates as to their importance. When they can be measured, then they should be included.

4. *The Growth of Physical Production, 1899-1922.*—For this, we have used E. E. Day's well-known index of the physical volume of

TABLE IV

INDEX OF PHYSICAL VOLUME OF MANUFACTURES IN THE UNITED STATES

Year	Index of Manufactures	Year	Index of Manufactures
1899	100	1911	153
1900	101	1912	177
1901	112	1913	184
1902	122	1914	169
1903	124	1915	189
1904	122	1916	225
1905	143	1917	227
1906	152	1918	223
1907	151	1919	218
1908	126	1920	231
1909	155	1921	179
1910	159	1922	240

[28] Since these statistics of employment did not begin until July, 1914, the yearly average was secured by projecting them back for the preceding six months according to the monthly fluctuations in employment shown by the 1914 census of manufactures.

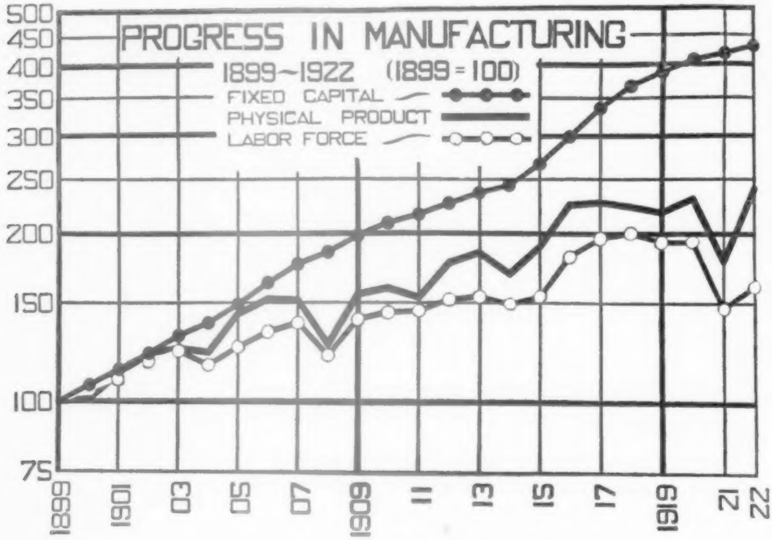


CHART I

production for the years 1899-1922, since at the time we were carrying through our studies the later index given by Dr. Thomas was not available.[29]

Chart I shows on a logarithmic scale the relative growth in manufacturing during this period of fixed capital, of the labor force, and of the

TABLE V

THE RELATIVE PROPORTIONS OF LABOR AND CAPITAL WHICH WERE COMBINED IN MANUFACTURING 1899-1922 (1899=100)

Year	Relative Amount of Labor to Capital	Year	Relative Amount of Labor to Capital
1899	100	1911	67
1900	98	1912	67
1901	96	1913	65
1902	97	1914	61
1903	94	1915	58
1904	84	1916	61
1905	84	1917	59
1906	82	1918	55
1907	78	1919	50
1908	65	1920	47
1909	71	1921	35
1910	69	1922	37

[29] For a description of the methods and sources used in computing the index of production for manufactures, see E. E. Day and W. M. Persons, "An Index of the Physical Volume of Production." *Review of Economic Statistics,* II (1920) 309-37; 361-67. See also Ada M. Mathews, "The Physical Volume of Production in the United States in 1924," *Ibid.,* VII. (1925), 215.

physical product. It will be noted that by 1922 the supply of capital had more than quadrupled as compared with 1899, while the labor force was only 61 per cent greater. The ratio of capital to the working force was indeed 2.67 times as great in 1922 as it had been in 1899. The increase in the physical product during this period was 140 per cent or an increase of approximately 50 per cent per worker.[30]

5. *The Ratio of Labor to Capital.*—The changing ratio between labor and capital as compared with 1899 can be found by dividing the relative index of the labor supply by the relative index of fixed capital (L/C). This is shown in Table V. We thus have a measure of the changing proportions of the two factors throughout the years of this period.

It will be noted that since our index of labor measures the decline in the number of wage-earners employed during periods of depression while our index of capital does not show the unused capital, that during such years, the proportion of labor to capital drops sharply, with a tendency to rise during the succeeding years. The general drift is, however, of course downward because of the much more rapid increase of capital.

6. *Theory of Production.*—Relative to the indices of Production, Labor, and Capital, and the period 1899–1922 the function of Labor and Capital alone

$$P' = 1.01L^{3/4}C^{1/4}$$

has the following properties:

1) To say that P' represents the actual Production P is to give particular expression to a well-known theory.
2) P' approaches zero as either L or C approaches zero.
3) P' approximates P over the period.
4) The deviations of P' from P are individually significant.
5) P' correlates closely with P when we include secular trends.
6) P' correlates closely with P when we eliminate secular trends.

In the sense of the foregoing let us call P' a *norm* for P over the period, and proceed to examine its properties in more detail.

(1) The theory referred to (due to J. B. Clark, Wicksteed et al.) states that Production, Labor and Capital are so related that if we multiply both Labor and Capital by a factor m then Production will be increased m times, that is Production is a first degree homogeneous function of Labor and Capital. Now P' is taken to be such a function.

(2) Among such functions the further theoretical restriction is placed upon P' that it should approach zero as either L or C approaches zero.

[30] As Dr. Thomas shows, the most remarkable increase in productivity has come since 1921 and is scarcely included in the above statistics.

Among functions with these properties (1) and (2) let us make a definite choice[31] and examine the consequences of that choice, reserving the right to make other choices if we wish. Let us choose the function

$$P' = bL^kC^{1-k}$$

and find such numerical values of b and k that P' will "best" approximate P in the sense of the Theory of Least Squares. Then relative to the indices and the period we have the norm

$$P' = 1.01L^{3/4}C^{1/4}$$

(3) Given the indices of L and C, the function P' may be computed and may be compared with P in Table VI and Chart II as follows:

TABLE VI

RELATION BETWEEN (1) PRODUCT CALCULATED FROM RECORDED VALUES OF L AND C (TABLES II AND III) BY MEANS OF THE FORMULA $P' = 1.01\ L^{3/4}\ C^{1/4}$ AND (2) RECORDED VALUES OF PRODUCT (TABLE IV)

Year	P′ Product Calculated (1)	P Product Recorded (2)	Percent Deviation $\frac{(2)-(1)}{(2)}$	Business Annals[32]
1899	101	100	−1	Prosperity
1900	107	101	−6	Prosperity; brief recession
1901	112	112	0	Prosperity
1902	121	122	+0.8	Prosperity
1903	126	124	−1.6	Prosperity; recession
1904	123	122	−0.8	Mild depression; revival
1905	133	143	+7.	Prosperity
1906	141	152	+7.	Prosperity
1907	148	151	+2.	Prosperity, panic, recession, depression
1908	137	126	−9.	Depression
1909	155	155	0	Revival, mild prosperity
1910	160	159	−0.6	Recession
1911	163	153	−6.5	Mild depression
1912	170	177	+4.	Revival; prosperity
1913	174	184	+5.5	Prosperity; recession
1914	171	169	−1.2	Depression
1915	179	189	+5.	Revival; prosperity
1916	209	225	+7.2	Prosperity
1917	227	227	0.	Prosperity; war activity
1918	236	223	−6.	War activity; recession
1919	233	218	−7.	Revival; prosperity
1920	236	231	−2.2	Prosperity; recession, depression
1921	194	179	−8.4	Depression
1922	209	240	+13.	Revival; prosperity

[31] This amounts to an assumption that the marginal productivity of labor is proportional to the production per unit labor and the marginal productivity of capital is proportional to production per unit capital. These properties are derived from the "chosen" function in a later section.

[32] W. L. Thorp *Business Annals*, p. 138 ff.

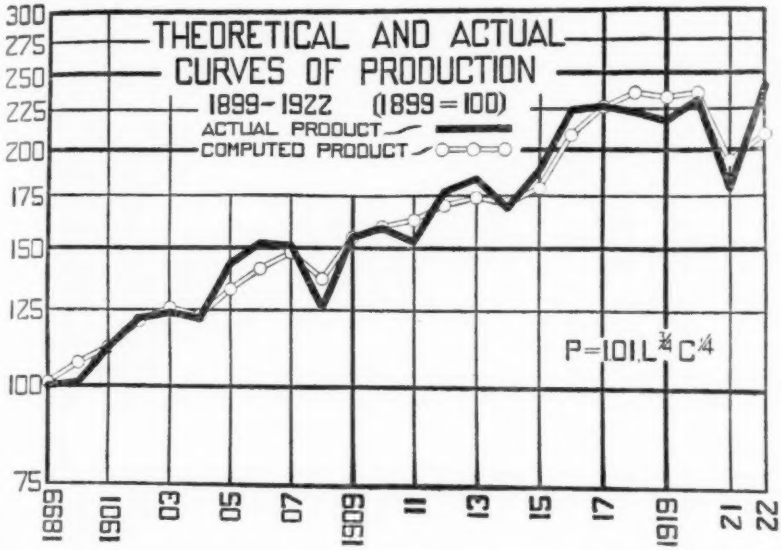


CHART II

The average percentage deviation of P' from P without regard to sign is 4.2 per cent. In fact, P lies nearer to P' than to its own moving three year average, the corresponding standard deviations being 8.7 and 11.7 respectively.

TABLE VII

DEVIATIONS FROM TREND OF P AND P′ (TRENDS ARE MOVING 3 YEAR AVERAGES)

Year	Deviation of P from Trend of P	Deviation of P′ from Trend of P′	Year	Deviation of P from Trend of P	Deviation of P′ from Trend of P′
1900	−3	0	1911	−10	−1
1901	0	−1	1912	6	1
1902	3	1	1913	7	2
1903	1	3	1914	−12	−4
1904	−8	−4	1915	−5	−7
1905	4	1	1916	11	4
1906	3	0	1917	2	3
1907	8	6	1918	0	4
1908	−18	−10	1919	−6	−2
1909	7	4	1920	22	15
1910	3	1	1921	−38	−19

(4) It is evident from the foregoing Table VI and Chart II that the trends of P and P' (say the moving three year averages) are much alike, in fact P' was constructed so that they should be. A study of Table VII and Chart III will show also that in general P' fluctuates with the business

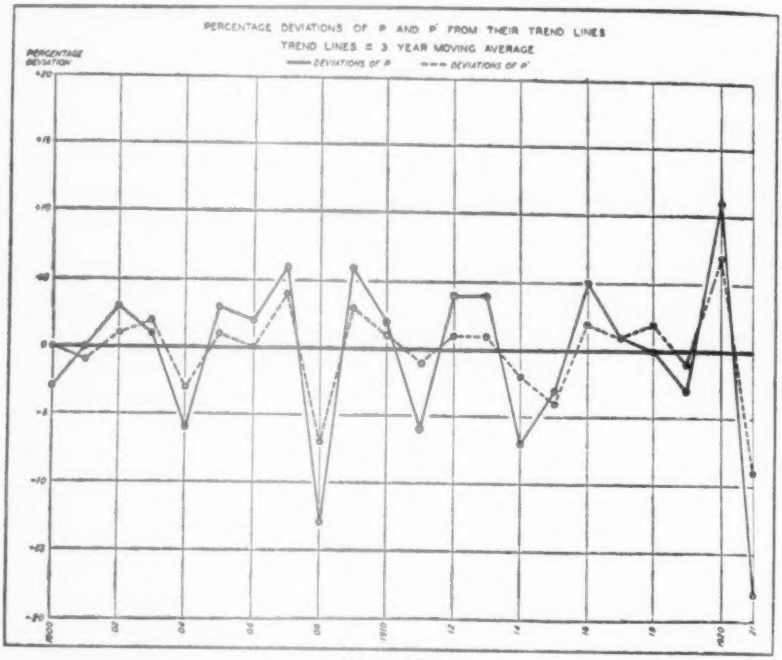


CHART III

cycle in the same direction as does P, with this difference that the oscillations of P' (relative to trend) are not as great as those of P, due to the steadying influence of the steadily increasing C.

When we consider also the Business Annals as given by W. L. Thorp it is evident (Table VI and Chart IV)[33] that in general we compute too little in times of prosperity and too much in times of depression. Then not only does P' follow the business cycle but also the deviations of P' from P follow the business cycle.

(5) and (6). The coefficient of correlation between P and P' with trends included is .97 and with trends eliminated is .94.

So far we have been taking for granted that the "normal" production P' would have been produced with given quantities of labor and capital under "normal" conditions. These normal conditions are fictitious. For example the productive power of the "average" worker or of the dollar of constant purchasing power is supposed to remain constant over the period. For normal conditions management would not be more or less efficient at different times. There would be no booms nor depressions, no wars and

[33] Note that the algebraic signs of the percentages in the chart are opposite from those in the table.

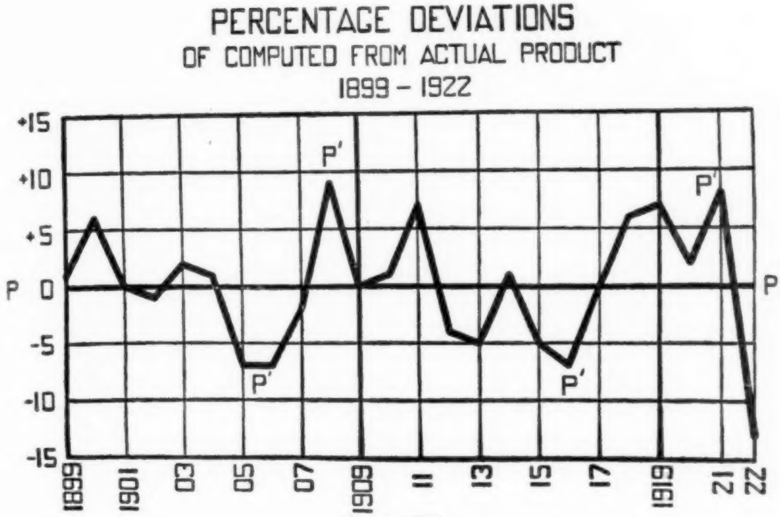


CHART IV

so on, under normal conditions. The differences between production under normal conditions and production under actual conditions may be compared as in (4) above with the *Business Annals* of the period, year by year.

Now it is possible to apply mathematical analysis to the fictitious production P' but it is not possible to apply such analysis to the actual production P unless we make (or conceal) certain further assumptions. Let us choose the following assumptions and let their justification rest on what we deduce from them.

(A) The Physical Volume of Production is proportional to the Volume of Production due to manufacturing alone.

(B) Any departure of P from P' may be represented by a change in the value of the coefficient of $L^{3/4}C^{1/4}$ so that always

$$P = bL^{3/4}C^{1/4}$$

where the value of b is independent of L and C.

These two assumptions are made in accordance with a general policy to ignore the quantitative effects of any force for which we have no quantitative data. The coefficient b is thus made a catch-all for the effects of such forces.

Making these assumptions it follows at once by mathematical analysis that:

I. The marginal productivity of labor is $3/4\ P/L$.

II. The marginal productivity of capital is $1/4\ P/C$.

III. The productivity of total labor is $3/4P$.

IV. The productivity of total capital is $1/4P$.

This imputes three-fourths of the product to labor and one-fourth to capital for the period in question.

V. The elasticity of the product with respect to small changes in labor alone is 3/4.

VI. The elasticity of the product with respect to small changes in capital alone is 1/4.

This means that a small percentage change in labor alone has three times the effect that would be made by the same small percentage change in capital alone.

These six theorems will be proved in the next section. It should be born in mind, however, that our results have been given exact numerical values for the sake of fixing the ideas. But the numbers themselves are fixed tentatively relative to a certain period and to certain indices. When the indices are refined or the period is changed it may be that the constant 3/4 will appear as a constant .7 or .6 or perhaps as a variable. Even the *form* of the function P' may have to be changed.

It is the purpose of this paper, then, not to state results but to illustrate a method of attack. In choosing a definite Norm for Production as a first approximation it is not at all certain that we have arrived immediately at the best possible. The advantage in choosing a norm at all seems to be that it involves us in logical consequences which may be compared with the facts as we get the facts. It enables us to talk rightly or wrongly with more precision and to draw conclusions which become hypotheses.

7. *Mathematical Analysis.*—Given the function

$$P=bL^kC^{1-k}$$

where b is independent of L and C and (to fix the ideas) k is supposed to be constant and equal to 3/4. Then the six theorems of the preceding section may be proved by the six equations which follow:

(1) $$\frac{\partial P}{\partial L}=\frac{3}{4}\,\frac{P}{L}$$

(2) $$\frac{\partial P}{\partial C}=\frac{1}{4}\,\frac{P}{C}$$

(3) $$\frac{L\partial P}{\partial L}=\frac{3}{4}P$$

(4) $$C\,\frac{\partial P}{\partial C}=\frac{1}{4}P$$

(5) $$\frac{\partial(\log P)}{\partial(\log L)}=\frac{3}{4}$$

(6) $$\frac{\partial(\log P)}{\partial(\log C)}=\frac{1}{4}$$

If b is taken equal to 1.01 say, then

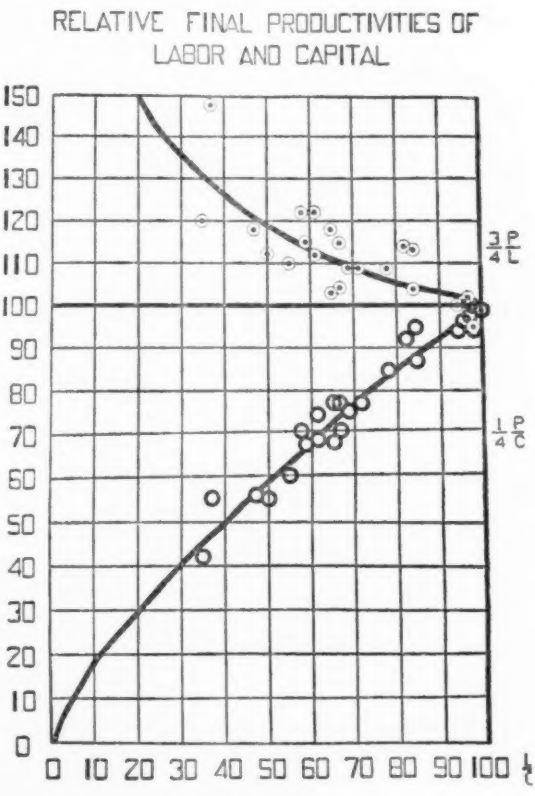
(7) $$\frac{\partial P}{\partial L}=1.01\times\frac{3}{4}\times\left(\frac{L}{C}\right)^{-1/4};\quad b=1.01$$

$$\frac{\partial P}{\partial C} = 1.01 \times \frac{1}{4} \times \left(\frac{L}{C}\right)^{3/4} \quad ; \quad b = 1.01 \tag{8}$$

From (7) and (8) it follows that just as Production has a norm which it approximates, so the marginal productivities of labor and capital have norms which they approximate; namely, the curves $y = 1.01(L/C)^{-1/4}$ and $y = 1.01(L/C)^{3/4}$ respectively.

The three norms and the corresponding quantities are so related that if one quantity, say production, rises above its norm by 5 per cent then each of the other two quantities rises above its norm by 5 per cent. This is due to the algebraic identity

Chart V[34]



[34] In the chart the "normal" curves are taken without the coefficient 1.01 and the indices of marginal productivity are depressed proportionally.

$$\frac{P}{L}:\left(\frac{L}{C}\right)^{-1/4}=\frac{P}{C}:\left(\frac{L}{C}\right)^{3/4}=P:L^{3/4}C^{1/4}=b:1.$$

We may now find the rates of change of the marginal productivities and total productivities by taking derivatives of equations (1) to (4) replacing the constant 3/4 by the indefinite k and remembering that k is to be constant, positive and less than 1.

$$\frac{\partial}{\partial C}\left[\frac{\partial P}{\partial L}\right]=k(1-k)\frac{P}{LC} \tag{9}$$

$$\frac{\partial}{\partial L}\left[\frac{\partial P}{\partial C}\right]=k(1-k)\frac{P}{LC} \tag{10}$$

and hence:

The productivity of unit labor *increases* per unit increase in capital alone. The productivity of unit capital *increases* per unit increase in labor alone. These rates of increase (which are equal for fixed values of L and C) are given by the expression on the right hand side of equations (7) and (8).

$$\frac{\partial}{\partial L}\left[\frac{\partial P}{\partial L}\right]=k(k-1)\frac{P}{L^2} \tag{11}$$

and hence (diminishing returns):

The productivity of unit labor *decreases* per unit increase in labor alone (since $k-1$ is negative) at a rate given by the right hand side of equation (11).

Similarly:

$$\frac{\partial}{\partial C}\left[\frac{\partial P}{\partial C}\right]=k(k-1)\frac{P}{C^2} \tag{12}$$

and hence (diminishing returns):

The productivity of unit capital *decreases* per unit increase in capital alone at a rate given by the right hand side of equation (12).

$$\frac{\partial}{\partial L}\left[L\frac{\partial P}{\partial L}\right]=k^2\frac{P}{L} \tag{13}$$

and hence:

The productivity of total labor *increases* per unit increase in labor alone, at a rate given by the right hand side of equation (13).

$$\frac{\partial}{\partial C}\left[C\frac{\partial P}{\partial C}\right]=(1-k)^2\frac{P}{C} \tag{14}$$

and hence:

The productivity of total capital *increases* per unit increase in capital alone at a rate given by the right hand side of equation (14).

$$\frac{\partial}{\partial L}\left[C\frac{\partial P}{\partial C}\right]=k(1-k)\frac{P}{L} \tag{15}$$

and hence:

The productivity of total capital *increases* per unit increase in labor alone at a rate given by the right hand side of equation (15).

$$\frac{\partial}{\partial C}\left[L\frac{\partial P}{\partial L}\right]=k(1-k)\frac{P}{C} \tag{16}$$

and hence:

The productivity of total labor *increases* per unit increase in capital alone at a rate given by the right hand side of equation (16).

Finally, if k is supposed to vary then P' becomes a function of three variables, and we have a new batch of theorems for example: "If k increases while L and C remain fixed then P' increases if L/C is greater than 1, and P' decreases if L/C is less than 1."

Thus if we choose a smaller k than 3/4 (say 2/3 for the whole period) the P' curve thus computed will lie above the P' curve computed with $k=3/4$ whenever L/C is less than 1, that is over most of the period. The relation between P and the new $P'=1.01L^{2/3}C^{1/3}$ is given in the following table.

TABLE VIII

RELATION BETWEEN P AND $P'=1.01\ L^{2/3}\ C^{1/3}$

	P	P′	$\frac{P-P'}{P}\times 100$		P	P′	$\frac{P-P'}{P}\times 100$
1899.....	100	101	−1	1911.....	153	166	−8
1900.....	101	106	−5	1912.....	177	173	+2
1901.....	112	111	+1	1913.....	184	178	+3
1902.....	122	119	+3	1914.....	169	176	−4
1903.....	124	125	−1	1915.....	189	185	+2
1904.....	122	123	−1	1916.....	225	214	+5
1905.....	143	133	+7	1917.....	227	234	−3
1906.....	152	142	+7	1918.....	223	244	−9
1907.....	151	149	+1	1919.....	218	243	−11
1908.....	126	139	−10	1920.....	231	247	−7
1909.....	155	157	−1	1921.....	179	208	−16
1910.....	159	163	−3	1922.....	240	223	+7

8. *What Indications are there That the Theory Outlined is Valid?*—That the equation $P'=1.01L^{3/4}C^{1/4}$ describes in a fairly accurate manner the actual processes of production in manufacturing during this period as indicated by:

(1) The close consilience between P and P' as shown in Table VI and Chart II with a coefficient of correlation of $+.97$. When three year moving averages of P and P' are taken the agreement is even closer, the percentage deviation of P' and P amounting on the average (without regard to sign) to only 2.6 per cent per year instead of 4.3 per cent on the year to year observations. The cumulative error of the three year moving average of P' from the three year moving average of P is in turn only $-.1$ per cent.

(2) The close degree to which the theoretical curves of imputed productivity of unit labor, i.e., $y=(L/C)^{-1/4}$ and of unit capital $(y=(L/C)^{3/4})$ form the curves of best fit to the "recorded" values of unit productivity of labor and of capital.

(3) It has some times been charged that the relationship discovered between capital, labor, and manufacturing product is purely fortuitous and that equally good results would be secured by comparing the relative movement of hogs in Wisconsin, cattle in Wisconsin, with the physical product in manufacturing. But there is a logical and economic connection between labor, capital, and product which is not present in the attempted *reductio ad absurdum*. Moreover the fact that the deviations of P' and P from their respective three year moving averages move closely together as is shown by Chart III and that they have a correlation coefficient of $+.94$ indicates that the relationship is not merely one between factors whose secular trend happens to be upward.

(4) The fact is that the deviations of P' from P are in nearly every case precisely what one would expect. Thus during depressions, large amounts of capital are of necessity allowed to lie idle but our index of capital growth makes no allowance for this. Similarly because of the practise of short-time, the number of man hours worked decreases by a greater ratio than that of the number of men employed. Our computed index P' would therefore be expected to be greater than the actual index P. Note then that in the depression years of 1908, 1911, 1914, 1920, and 1921, P' was 9, 7, 1, 2, and 8 per cent respectively higher than P, and that during the years marked by some recession or a slight depression such as 1900, 1903, 1904, and 1910, P' was also higher than P by 6, 2, 1, and 1 per cent respectively.

Conversely, since our index of labor does not take into account overtime hours nor our index of capital the greater intensity of use which prosperity brings, it would be expected that P' would be less than P during this phase of the cycle. This is born out in practice. For the prosperous years of 1905 and 1906, P' was 7 per cent below P, and for 1907, the first three-quarters of which displayed great activity, it was 2 per cent lower. In the prosperous years of 1912 and 1913, P' was in turn 4 and 6 per cent below P and in 1915 and 1916, again 5 and 7 per cent less than P. In 1922, P' was no less than 13 per cent below P.

The only two years which constitute an exception to what we would thus expect are 1918 and 1919. These were years of business prosperity yet P'

instead of being lower than *P* was actually higher by 6 and 7 per cent. This may, however, have been caused by the dilution and reduced efficiency of labor which made each unit of labor actually less productive than normally.

9. *Does the Process of Distribution Approximate the Apparent Laws of Production?*—We have attempted to check this theory to see whether the processes of distribution have followed in any degree the laws of production which we believe we have traced. By the methods which have previously been described (Sections 6 and 7) the relative final physical productivities of labor for each of the years were found in terms of 1899 to be as follows:

1899	100	1907	110	1915	123
1900	96	1908	104	1916	123
1901	102	1909	110	1917	116
1902	103	1910	110	1918	111
1903	101	1911	105	1919	113
1904	105	1912	116	1920	119
1905	114	1913	119	1921	121
1906	115	1914	113	1922	149

These relative physical productivities were then multiplied by the relative exchange value of a composite unit of manufactured goods and thus the relative *value product* per laborer in each of the years as distinguished from the relative physical product was secured. It is then possible to compare the movement of this value product of final labor with the relative movement of the real wages of the workers during this period in order to determine the degree of correspondence between them.

Before entering upon such a comparison, however, it is appropriate to describe how the exchange ratio of each unit of manufactured *goods* and of manufacturing as a whole was found. This was secured by multiplying the index of physical production by the ratio between the price level of manufactured goods and the relative general price level.

$$\text{Index of physical production} \;\; \text{X} \;\; \frac{\text{Price Index of Manufactured Goods}}{\text{General Price Level}}$$

This ratio of the prices of manufactured commodities to the general price level was computed from the statistics of wholesale prices collected by the Bureau of Labor Statistics and is shown in the following table.

This index shows that when measured in terms of 1899, a unit of manufactured goods had less purchasing power in ten subsequent years, reaching its lowest point of 85 in 1910. Its exchange value was somewhat higher in the subsequent years and it rose somewhat in 1922 when it was still 10 per cent below 1899. This in turn reduced the total

value product from 240 to 217 which although also shared by 1920, was the highest point for the period.

TABLE IX

RELATIVE VALUE PRODUCT OF MANUFACTURED GOODS AND TOTAL VALUE PRODUCT OF MANUFACTURING 1899–1922 (1899 = 100)

Year	Price of all Mfg Commodities 1	All Commodity Index 2	Ratio Mfg Commodities to all Commodities 3*	Total Value Product (Physical product times column 3)
1899	100	100	100	100
1900	105	108	98	99
1901	101	106	96	107
1902	103	113	91	111
1903	104	114	91	113
1904	103	114	90	109
1905	106	115	92	132
1906	112	118	95	144
1907	119	125	95	144
1908	110	120	91	115
1909	112	129	87	134
1910	115	135	85	136
1911	111	124	90	137
1912	116	132	88	156
1913	117	134	88	162
1914	113	131	86	146
1915	119	135	88	167
1916	156	169	92	207
1917	210	237	89	201
1918	226	259	87	194
1919	242	276	89	191
1920	284	302	94	217
1921	186	196	95	170
1922	179	199	90	217

* Column 3 equals column 1 divided by column 2.

The relative physical productivities of the final units of labor successive years were then multiplied by the relative exchange ratio of a unit of physical product for the appropriate year and an index of relative *value* productivity for the final units of labor in the various years was thus obtained. This was as shown in Table X with the average for the years from 1899 to 1908 taken as 100.[35]

This was then compared with the index of real wages for manufacturing computed by one of the authors.[36] To avoid the assumption that correlation was perfect in the year 1899, the average for the years

[35] The price statistics were taken from Bulletin 390 of the Bureau of Labor Statistics. The groups of commodities included to form the price index of manufactured goods were: (1) food, (2) cloths and clothing, (3) chemicals and drugs, (4) metals and metal products, (5) building materials, (6) house furnishings, (7) among the miscellaneous commodities, leather, paper and pulp, soap, and tobacco.

[36] Paul H. Douglas, "The Recent Movement of Real Wages and Its Economic Significance." Supplement, *American Economic Review*, March, 1926, p. 33.

1899-1908 was instead taken as the base. The comparative table is shown on page 164.

TABLE X

RELATIVE VALUE PRODUCTIVITY PER UNIT LABOR 1899–1922

Year	Relative Value Productivity per Unit of Labor	Year	Relative Value Productivity per Unit of Labor
1899	101	1911	96
1900	95	1912	103
1901	99	1913	106
1902	95	1914	98
1903	93	1915	110
1904	96	1916	115
1905	106	1917	104
1906	111	1918	98
1907	105	1919	102
1908	96	1920	114
1909	97	1921	117
1910	95	1922	136

The coefficient of correlation between these series is + .69 with a probable error of ± .072 and if a comparison is made between the seven year moving averages of the two, the coefficient is + .89 with a probable error of ± .03. There is virtually no relationship, however, between the short time movements of the two, since the correlation of the deviations of each from its trend gives a coefficient of only .12.

The degree of correspondence discovered is however sufficient to give a considerable degree of corroboration to the law of production which has been worked out and to indicate that the processes of distribution follow in large measure the processes of production if sufficient time is allowed.

A further interesting comparison is afforded by the studies of the National Bureau of Economic Research into the proportion of the manufacturing product which went to labor during the decade 1909-1918. They found that wages and salaries formed on the average 74 per cent of the total value added by manufactures during these years.[37] We have found in our formula that when we attribute to labor 75 per cent of the product, we get a close consilience to the actual normal course of production.

There is apparently therefore a decided tendency for distribution to follow the laws of imputed productivity. Lest some be led however hastily to conclude that this lends an ethical justification to the existing social and economic order, it should be pointed out that

[37] National Bureau of Economic Research, *Income in the United States*, Vol. 2, p. 98. The percentages by years were as follows:

1909	72.2	1911	76.4	1913	74.5	1915	75.4	1917	71.0
1910	71.6	1912	74.5	1914	77.8	1916	68.7	1918	78.1

TABLE XI

RELATIVE MOVEMENT IN MANUFACTURING OF IMPUTED VALUE PRODUCT PER WORKER AND REAL WAGES (1899–1922) (1899–1908=100)

	(1) Value Product Unit Labor (Average 1899–1908=100)	(2) Real Wages (Average 1899–1908=100)	(3) Per Cent Deviation of (2) from (1). (2)–(1) / (1)	Business Annals (Abbreviated)
1899	101	99	−2	
1900	95	98	+3	Brief Recession
1901	99	101	+2	
1902	95	102	+7	
1903	93	100	+8	
1904	96	99	+3	Mild Depression
1905	106	103	−3	
1906	111	101	−9	
1907	105	99	−6	
1908	96	94	−2	Depression
1909	97	102	+5	
1910	95	104	+9	
1911	96	97	+1	Mild Depression
1912	103	99	−4	
1913	106	100	−6	
1914	98	99	+1	Depression
1915	110	99	−10	
1916	115	104	−10	
1917	104	103	−1	War
1918	98	107	+9	War
1919	102	111	+9	
1920	114	114	0	
1921	117	115	−2	Depression
1922	136	119	−13	

(1) Sum of deviations, without regard to sign = 125 per cent

(2) Average deviation $= \frac{125}{24} = 5.2$ per cent

(3) Sum of deviations with regard to sign $-68+57 = -11$ per cent

(4) Average deviations with regard to sign $= \frac{-11}{24} = -.5$ per cent

even if there were precise correspondence, it would not furnish any light upon the question as to whether capital for example should be privately owned to the degree to which it is in our society. For while capital may be "productive," it does not follow that the capitalist always is. Capital would still be "productive" even though its ownership were changed. Nor does it follow that the uses to which the capitalists put the income which they receive are on the whole socially the best. One may therefore be still a supporter of socialism, communism, or individualism and still square his social philosophy with the theory of production which we have developed.

10. *A Program for Further Work.*—In closing, it should be made clear that we do not claim to have actually solved the law of production,

but merely that we have made an approximation to it and suggested a method of attack. Future progress will be assisted by developing more refined series, by using different mathematical techniques, and by analyzing other sets of data.

Thus we may hope for: (1) An improved index of labor supply which will approximate more closely the relative actual number of hours worked not only by manual workers but also by clerical workers as well; (2) a better index of capital growth; (3) an improved index of production which will be based upon the admirable work of Dr. Thomas; (4) a more accurate index of the relative exchange value of a unit of manufactured goods.

In analyzing this data, we should (1) be prepared to devise formulas which will not necessarily be based upon constant relative "contributions" of each factor to the total product but which will allow for variations from year to year, and (2) will eliminate so far as possible the time element from the process.

We have developed our theory from the movement of labor, capital, production, value, and wages for the manufacturing industries of this country considered as a whole. There is opportunity to apply the same, or an improved method of analysis, to other lines of industry such as transportation, mining, public utilities, etc., in this country and to similar data for other countries. When this is done, we shall have most interesting material on the slope of the curves of imputed productivity for a wide variety of industries and may be able to frame combined curves for a country as a whole and from this frame interesting international comparisons.

Finally, we should ultimately look forward toward including the third factor of natural resources in our equations and of seeing to what degree this modifies our conclusions and what light it throws upon the laws of rent.

These are tasks which will require much time to complete but we submit that they are necessary if the precise relationships which probably lurk within economic phenomena are to be detected and measured.

ECONOMIC AND SOCIAL ASPECTS OF INCREASED PRODUCTIVE EFFICIENCY—DISCUSSION

Sumner H. Slichter.—The computations of Professors Douglas and Cobb raise so many interesting questions that I can discuss only several of the most important. My first questions relate to the reliability of the index of fixed capital. Professor Douglas reduces each estimated annual increase of fixed capital to 1880 dollars and then by addition builds up an estimate of fixed capital for each year in terms of 1880 dollars. Hence by the time he reaches his base year, 1899, any error in the deflation factor has had a chance to affect his estimate 19 times and, by the time he has reached the last year, 42 times.[1] If we could be certain that errors in the deflation factor affected the annual estimates by the same *relative* amounts, they could be disregarded. The deflation factor, however, appears to be subject to a double bias. In the first place, giving wages a constant weight tends to exaggerate the influence of wage rates upon the cost of fixed capital during the later years of the period because, as Professor Douglas' indexes show, labor becomes a steadily less important factor in production technique. Since money wages rose far more than wholesale prices during the period 1899 to 1922, the progressive overweighting of labor causes the deflation factor to understate the additions to physical capital.[2] A second bias in the same direction arises from the fact that the deflation factor, being based upon the prices of labor and raw materials, fails to reflect the growing efficiency of fabricating and construction technique. The error is probably greatest in the case of building costs. Building labor and materials have risen by leaps and bounds but radical changes in building design and construction methods have prevented the cost of finished structures from rising in proportion.[3] The double bias in the defla-

[1] Professor Douglas concedes that the census figures on capital investment are unreliable and it is generally known that the Aldrich Committee figures from which he constructs his capital cost index for the period 1880 to 1889 are unsatisfactory. Consequently when Professor Douglas builds up his estimate of physical capital by dividing the unreliable census figures by the unreliable Aldrich Committee figures, he risks a double error in his result. Since the period under analysis extends only from 1899 to 1922, there is no reason why the estimate of physical capital should not begin with the year 1899.

[2] For example, metals and metal products advanced less than 12 per cent between 1899 and 1922 but wages of persons engaged in manufacturing increased approximately 170 per cent. The difference between the changes in wages in the building trades and the cost of construction materials, though much less, is still considerable. For the period 1899 to 1913, Professor Douglas and Miss Lamberson found an advance of approximately 56 per cent in the hourly earnings of building trades workers and for the period 1913 to 1922 the Bureau of Labor Statistics found an 87 per cent increase in the hourly union wage rates in the construction industry. Hence we may conclude that from 1899 to 1922 hourly wage rates increased by roughly 190 per cent. Building materials, however, advanced by only about 119 per cent.

[3] In view of the marked divergence in the wages of building labor and the prices of construction materials on the one hand and of the prices of metal products and the wages of labor in manufacturing on the other hand, it would seem desirable to use two capital cost indexes instead of one—one index for buildings and the other for machinery and equipment. For example, comparing Professor Douglas' capital cost index with the American Telephone and Telegraph Company's index of

tion factor is extremely important because the growth of fixed capital is large in proportion to the amount in existence in 1899, the base year. Consequently a small error in the estimated growth produces a substantial difference in the relatives. Should the bias in the deflation factor cause the amount of fixed capital in 1922 relative to 1899 to be underestimated by only 10 per cent, it would make a 43 point difference in the index for 1922.

This, however, is not all. A more serious difficulty arises from the fact that the entire series of relatives changes as one varies the year selected for the deflation factor. Suppose that we deflate with the 1910 instead of the 1880 dollar. The relative for 1922 becomes 492 instead of 431, 61 points above the result which Professor Douglas obtains. The reason for this great discrepancy simply is that the inaccuracies in the census figures cause the estimate for the base year 1899, which is obtained by building back from 1910, to be nearly $700,000,000 less than that obtained by building forward from 1880. The absolute changes from year to year remain unaltered because the 1910 dollar has the same value as the 1880 dollar, but, because the base is smaller, the same absolute changes produce a very different series of relatives. I am not here concerned with how the deflation problem can be solved. The essential point which I wish to drive home is that Professor Douglas' method makes the size of the 1899 base depend upon the year from which the deflation factor is selected. Consequently, the entire series of relatives varies with the deflation factor which is used. Deflating with the 1906 dollar, for example, gives an index of 488 for 1922, and the 1890 or the 1919 dollar would yield still different results—*the base year, it being remembered, in all cases remaining 1899.* This peculiar substance, abstract physical capital, which changes in *relative* as well as in absolute magnitude as one applies now this and now that deflation factor, appears to be composed of the stuff that dreams are made of. A series of relatives which is so dependent upon the deflation factor can scarcely command confidence.

The uncertainties in the index of physical capital introduce uncertainty into the index of the relative productivity of the final unit of capital. For example, if we deflate with the 1910 instead of the 1880 dollar, the relative

building costs (computed from the monthly figures given in Mills' *Statistical Methods*, pp. 310-311) for the period 1914 to 1922 gives the following results:

	Professor Douglas' capital cost index	A. T. and T. construcure cost index
1914	101	100
1915	105	103
1916	135	117
1917	173	155
1918	183	172
1919	196	192
1920	237	253
1921	184	203
1922	181	193

It is, of course, possible that the single index would give substantially the same results as two indexes but this is a dangerous assumption to make.

final productivity per unit of capital in 1910 becomes 70 instead of 76; in 1921, 37 instead of 43; and in 1922, 49 instead of 56.

The unreliability of the index of fixed capital undoubtedly robs Professor Cobb's computations of the significance which they would otherwise possess. But disregarding this point, what light does his equation throw upon the truth of the marginal productivity theory? The position of Professors Douglas and Cobb, if I understand it rightly, is that an important step toward verifying the theory will have been taken if it can be shown that variations in the output of industry on the one hand and the factors of production on the other can be expressed by a homogeneous function of the first degree—that is to say, if x times the factors of production will yield x times the original product. It is well known that this must be true if the marginal productivity theory is valid. Professor Cobb has found a homogeneous function of the first degree in which the indexes of Professor Douglas give a computed index of productivity that closely corresponds with Professor Day's index of manufacturing output. Hence Professors Douglas and Cobb conclude that it has been statistically demonstrated that the relationship between the agents of production on the one hand and the volume of output on the other meets the requirements of the marginal productivity hypothesis.

The most obvious objection to this conclusion is that the marginal productivity theory presupposes that given changes in *all* factors will result in proportionate changes in their joint product. Clearly the truth of the theory is not established by showing that this assumption may be made for *some* factors—especially when one of the omitted factors is entrepreneurship, to which it is exceptionally difficult to apply the marginal productivity analysis.[4] And although it may be *roughly* true that changes in all factors result in proportionate changes in the joint product, it can scarcely be insisted that this is *precisely* true. Otherwise economists must cease discussing the advantages of greater specialization of labor and capital and of larger producing units. From the standpoint of the theory of distribution, even small discrepancies between changes in the factors and changes in the joint product are important because they introduce the possibility of making relatively large changes in the income of certain groups through bargaining—especially in the income of the relatively small entrepreneurial group.

Professor Cobb's equation, it is important to notice, pertains to *physical* output only. But distribution is a matter of dividing not a physical product but a *price* product and the proportions in which the product is divided are determined by buying and selling, and by the prices which emerge from that process. A description of the relationship between productive agents and physical output sheds little light upon what happens in the market place where the distribution of income actually takes place. If the marginal productivity theory is valid, it must be true either that given changes

[4] Apparently Professor Douglas does not assume that his index of fixed capital may be taken to represent all factors of production other than labor. Such an assumption would, of course, be purely gratuitous.

in the instruments of production cause proportionate changes in the *price* product as well as in the physical product, or that the prices paid for factors of production can be instantaneously and completely adjusted to changes in price productivity. The first condition is plainly not true because even small changes in the physical output of an enterprise often affect perceptibly the price at which it can sell its wares.[5] As for the second condition, every one knows that land and capital are often obtained on long-term contracts which fix the rate of compensation for several generations. Wages are *legally* subject to change without notice but there are managerial difficulties in reducing wages whenever the value of labor diminishes. As a result of this more or less frozen price situation, an enterprise which purchased more labor or equipment and thus increased its output would thereby reduce the price productivity of its original units of land, labor, and capital to a point below the amounts paid for their use. Under these circumstances the price which the concern could afford to bid for additional increments of land, labor, or capital would be less than their marginal worth. It is probable that a large proportion of enterprises are in this situation.

A serious difficulty with the marginal productivity theory arises from the fact that it is apparently impossible for the individual entrepreneur to determine the differential contribution of each productive agent. In order to do this he must be able to add a unit of the factor without increasing any of the other factors. But is it possible to add land, labor, or capital, *without at the same time adding some of the vague and little understood factor called "entrepreneurship"?* Is not risk bearing increased every time the enterprise enters into a contract for the purchase or lease of land, labor, or capital? Is it then possible to add "pure" land, labor, or capital? Is it not always a *mixture* of land and risk bearing, capital and risk bearing, or labor and risk bearing which is added? If the reply is that the theory applies only to a static state where there is no uncertainty and hence no risk, a new crop of difficulties is raised. For example, the static state presupposes competition. But can competition exist without risks for the competitors?

Professor Douglas compares the relative changes in the imputed value product per worker in manufacturing with the real wages of persons engaged in manufacturing. Such a comparison is interesting but of limited significance, especially when the period covered is short. Even if the two indexes move together during a given time, can it be regarded as more than a coincidence? Should we necessarily expect them to move together?

[5] When distribution is discussed in terms of farmers deciding whether or not to plant a few more acres of this or that staple crop, the effect of changes in output upon price may be ignored. But a manufacturer who makes even a small increase in his output is likely to find himself compelled to make appreciable price concessions in order to get rid of it—assuming, of course, no change in demand. Furthermore, the technical interdependence of productive factors makes the increments in which it pays enterprises to add capital, land, or labor substantially larger than is often supposed. Assuming a perfectly balanced labor force, for example, it would rarely be advantageous to add only a single workman. To avoid destroying the balance, it would be necessary to add groups containing several varieties of specialists.

Real wages are affected by a rather narrow group of prices—in large degree, prices of agricultural commodities. The changes in these prices may differ both in direction and amount from changes in the general purchasing power of manufactured goods. A close relationship might be expected between *money* wages on the one hand and the marginal *price* productivity on the other, but this, of course, is a very different matter.

A word should be said about the permanent validity of an equation such as Professor Cobb has constructed. Obviously the assumption that x times the factors of production will yield x times the product presupposes that technique remains substantially unchanged. Consequently, an equation which yields a fairly satisfactory index of physical product for one or two decades would probably not do so for longer periods. In fact, I suspect that Professor Cobb's equation would be found unsatisfactory for the years subsequent to 1921, because in that year there began a striking change in the relationship between the number of workers in manufacturing and the volume of manufactured output.[6] In the year 1922, there was a conspicuous deviation between the computed productivity index and the index of Professor Day—a difference of 31 points, far greater than any other occurring during the twenty-three year period. Had the computed index been compared with the Day-Thomas index, the deviation would have been even larger. But if the equation has only ephemeral accuracy, are we justified in calling it "the law of production"? Incidentally, the fleeting validity of the equation is significant from the standpoint of the theory of distribution, because the same technical innovations which destroy the accuracy of the equation also create opportunities for bargaining by causing the joint output of productive instruments to be worth more than the sum of their prices in the open market.

In conclusion, let me suggest that the application of quantitative analysis in the study of distribution is likely to be most useful when investigations are not too much oriented by the desire to verify specific propositions of static theory. There is probably no more important single cause for our meagre knowledge of the distributive process than the fact that the subject has been so largely studied within the narrow limits imposed by the assumptions of static economics. But distribution is an historical process and needs to be studied as such. Indeed, a promising subject for quantitative analysis would be the extent to which the distribution of income today is directly determined by prices which were made five, ten, fifteen, or twenty years ago. Quantitative economics, by helping to provide the raw material for a realistic theory, can be of great use in liberating the study of distribution from the tyranny of economic statics. But it can be of little assistance if statisticians and mathematical economists are too completely preoccupied with verifying the propositions of static doctrine.

[6] As Mr. Thomas's figures show, during the first two decades of the century there was slight change in the product per person employed in manufacturing. During the last six years, however, the per capita output of persons engaged in manufacturing has risen sharply.

John D. Black.—President Adams has particularly asked me in discussing Mr. Thomas's paper to point out the things in it which are significant from an agricultural standpoint. I therefore wish to direct attention to a few of the figures in Table I. The first division of the table shows the number of workers in agriculture increasing by 6.5 per cent during the decade 1900 to 1910, as contrasted with decreases for the two succeeding census periods. Although these figures come from the haunts of the census, I am not sure that the figure for 1910 sufficiently eliminates the million or so additional boys and girls and women that were counted as gainfully employed in agriculture in 1910 because of a change in the census instructions.

The next figure to which I wish to call attention is the 93 per cent for number of workers in 1925 as compared with 1920. It is hard to believe that there was an actual decrease of 7 per cent in the number of workers in agriculture, manufacturing, mining and railway transportation in this short period. The available estimates are to the effect that the agricultural population decreased 2½ millions during this period. We agricultural economists had been assuming that manufacturing had absorbed most of these. But the census shows a decrease of 8.5 per cent for manufacturing! Mr. Thomas is surely justified in being skeptical of this figure.

But, of course, it is entirely possible that the 7 per cent have been absorbed by the expansion in construction, in transportation other than railroads, and in retailing and other forms of merchandising. The census of occupations shows the group "trade, transportation, and clerical work" increasing from 12.2 per cent to 24.8 per cent of the total in the forty years before 1920[7]; and no doubt there could have been considerable of a shift from 1920 to 1925. Common observation of the rapid increase in retail establishments, especially oil filling stations, bake-shops, delicatessens, and the like, would support such an opinion. Also there may have been a considerable increase in the leisured class—although it is unlikely that many of the 2½ millions from the farms have joined this group.

The table shows an increase of 12.5 per cent in the total output from agriculture from 1919 to 1925. It should be stated here that Professor George F. Warren disputes this figure, insisting upon a decrease rather than an increase. He says that it is based upon an average of a period of rising output as compared with an average for a period of falling output, with a "hump" in between. Mr. Thomas's figures were obtained from the Bureau of Agricultural Economics. Inquiry at the Bureau reveals an index series for physical volume of agricultural production that is still in tentative form, and not available for general publication, which indicates no decline in the years 1924, 1925, and 1926, but rather an increase over the preceding three years. The comparison of these years with 1918-1920, and with 1921-1923, amply substantiates Mr. Thomas's figures. Nevertheless, one must not assume that the issue as to facts here is altogether settled.

[7] *Commerce Yearbook*, 1926, p. 15.

The comparisons between agriculture and industry in this table illustrate one of the vagaries of index number construction if nothing else. The comparisons for the whole period, for example, show that agriculture increased in output per worker only 47 per cent as compared with 78 for the total of agriculture and the other three. Indeed does agriculture appear backward! But the percentage for manufactures is only 47, the same as for agriculture, and for manufactures, mining, and transportation combined, only 53! Hence agriculture does not make such a bad showing after all. (Mr. Thomas admitted later that this latter is the proper comparison.)

Much has been made in late years of the low purchasing power of farm products. The figures prepared by the Bureau of Agricultural Economics show 83 as the average for 1924, 89 for 1925, 85 for 1926, and 92 for October, 1927. These are crop-year comparisons. They represent the ratio between the index of prices of farm products at the farm and the wholesale price index of non-agricultural commodities. The base period is 1909-1914. If Mr. Thomas's figures may be taken as correct they indicate that since this base period an increase of 36 per cent in output per worker in agriculture has occurred. The increase in total output since 1909-1914, as nearly as can be determined by putting together Mr. Thomas's figures and the Bureau's tentative figures, was about 27 per cent. Since the number of farms increased less than 1 per cent during the period, this 27 per cent may be taken to represent increase in output per farm also. It seems very clear that this 27 per cent increase in gross output per farm and 36 per cent per worker must be taken as at least partly offsetting the deficit in purchasing power of farm products. One important defect in the argument is the fact that the purchasing power is not reckoned in terms of the retail prices paid by farmers for what they buy; and another is that taxes and wages of hired labor are not represented in it. If the purchasing power figure took account of all the items for which gross farm income is spent, it would probably be reduced to somewhat below 85. Even this would not take account of the heavier mortgages which farmers now have to meet interest upon and pay off; nor of the very considerable expansion in the content of their living that has occurred, even since 1920 in many areas. And against it must also be set the very pronounced increase in real wages and real incomes of city wage-earners and capitalists that has occurred particularly since 1920.

THE MEANING OF VALUATION

By Arthur T. Hadley
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This is not a paper on the theory of value nor on the theory of rate making. It is essentially a study in the use of terms. What are we talking about when we speak of valuation? How did the idea of value originate and develop? Are there several kinds of value, or is there only one kind? To what sort of processes should we apply the name valuation and to what sort of processes should we apply the name assessment? What dangers or evils result from confusing the two concepts by giving them one indiscriminate name?

I do not intend to underrate the difficulty and public importance of the work which valuation experts are doing today. They are face to face with acts of the legislature which require them to assess property for rate-making purposes by certain prescribed methods. They are sometimes ordered to call the process valuation. These statutes are often very badly drawn. Mr. Prouty of the Interstate Commerce Commission, who was a leader in the movement for the so-called physical valuation of railroads, stated that he would rather undertake to recite the Chinese alphabet backward than to read the Valuation Act, because it does not mean anything after you have read it. Many of the state laws are better in this respect than the Interstate Commerce Act; but there are always a number of things to be interpreted and clarified before the expert can know how to proceed in the task of assessment which is laid before him. We need men to do this difficult work. But I believe that the word valuation ought not to be applied to such a process of assessment; that its use, even when prescribed by act of the legislature, is wrong in principle, misleading in practice, and likely to hinder the work of clarification instead of helping it.

An assessment is a charge, or basis of charges, fixed by constituted authorities for any purpose whatever. An administrative board may assess taxes, or assess the land which forms the basis of taxation. A court may assess damages for an injury. A club may assess its members to meet a deficit. The term is a general one meaning the fixing of prices by authority. And it has been specifically applied to the fixing of prices of public services by the magistrates. The most familiar example of price regulation in the Middle Ages was the assessment or, as it was then more commonly called, Assize of Bread.

The words value and valuation stand on quite a different footing. Value is based primarily, not on what government says, but on what people actually want, and actually do or are ready to do. Valuation, in the traditional meaning of the term, is an estimate of what people will pay for a given piece of property.

The conception of value is a comparatively modern one. Paradoxical as the statement may sound, the process of valuation had gone very far in its development before we began to define the term value. The genesis of the modern ideas of valuation can be traced back to the English courts of equity. In the common law courts the man who had broken or was trying to break a contract could be compelled to perform it. But what if conditions rendered such specific performance impossible? The complainant had only an "equitable" remedy at command. The defendant could be compelled to do something as nearly as possible equivalent to the damages occasioned by his failure. To make damages compensatory you had to value the loss and value the recompense as a means of securing justice.

Where could we find an objective standard for such valuation? In case of merchandise the answer was easy. We could go to the nearest market, find what price such merchandise commanded, and multiply that price by the amount involved. An award of this amount gave the complainant an inventory value which would make good his loss by enabling him either to purchase the same goods, or any other goods which commanded the same price that he happened to want more at the moment. The question of labor cost did not enter into this transaction except indirectly as one of the causes which affected the market price of the articles he owned or bought. What the courts emphasized as the basis of valuation was equivalence in purchasing power in a free market.

When it came to the valuation of an investment like a piece of improved real estate the procedure was different. Different pieces of improved land had an individuality of their own. It might happen that one piece of land, owing to natural advantages or to intelligent improvement, had a rental of five pounds sterling an acre, while another not far off had a rental of but one pound. In the case of fixing compensatory values for land the courts estimated as well as they could the net income from the land, and then found at what rate land with a given rent charge sold. In other words, they ascertained what was the capitalization rate of land held on long leases and fixed this as the basis of valuation of the estate. The use of this process of capitalization is very old, older indeed than the full legal recognition of interest itself. In fact there was a period when men who, like Balaam, wished to die the death of the righteous yet loved the wages of sin, used to justify themselves in taking interest by getting the borrower to create a real or fictitious rent charge on a piece of land and then buying the right to receive it. A relic of this still survives in the German word for interest, *zins*, which is a translation of the Latin *census* or rent charge.

This method of valuation in which we inventory merchandise at market price and land at a capitalized rental proved a good one for a great variety of purposes. If it was a question of damages it gave just compensation by furnishing an equivalent in purchasing power. If it was a question of taxation it furnished a basis of assessment which corresponded most closely to the ability to pay. The chief objection urged against it was that it overlooked the claims of the laborers who had produced the property to just compensation. But the efforts occasionally made to assess prices of merchandise on the basis of labor cost as recommended by Karl Marx, or prices of real estate investment on the basis of labor and capital cost, as recommended by Henry George, resulted either in encouraging the production of merchandise that was not wanted, or in discouraging the investment of new capital where it was wanted. In the latter part of the Nineteenth Century it was generally assumed that value, apart from some special qualifying adjective meant market value; as fixed directly for merchandise by competition in the produce markets, or indirectly for investments by competition in the money market.

But in the last thirty years we have discovered that a method of a valuation which was just in determining damages or arranging a basis of taxation, was of little use in fixing or regulating the charge for the services of railroads and electric companies. A certain rate or schedule of rates was complained of as unreasonable. If the company stated that their charges no more than paid interest on the value of the property, this was no answer at all; for the value of the property was itself a result of the rates charged. From this circle there appeared to be no logical escape. A demand arose for public regulation of rates; for an assertion of the right of the government to insist on reasonable charges and for a mode of assessment of the cost of the property which should serve as a rate base. This has resulted in a reopening of the discussion what value really meant and a reintroduction of the ideas of Henry George into the arena of debate.

In two respects the ideas of Senator LaFollette and his followers differed from those of Henry George. Mr. George would have applied his theories to all fixed investments in land. Mr. LaFollette confined them to public service corporations. Mr. George would have based the return on the historical cost of the property, i.e., the amount of labor and capital put into a piece of land. Mr. LaFollette, on the other hand, appreciated that the historical cost is a thing which we can seldom ascertain; and based his theory on duplication cost—cost of reproduction new minus depreciation. This he called physical value. This he regarded as the best objective standard that we have for regu-

lating rates, and as one to which the owners of public service corporations are bound to submit themselves in the interests of the public.

In this view of the present situation there is some truth and some error. It is unquestionably true that a company holding a public franchise, and especially when that franchise creates a monopoly, must submit to regulation in the public interest. It is also true that the old method of valuation does not furnish us an independent rate base and leaves the way open for a legislature to prescribe a method of assessment of its own. On the other hand, it is doubtful whether the assessment of a rate base is the proper method of procedure in rate regulation; and it is quite certain that the attempt to apply the term valuation to the assessment of a rate base on duplication cost as a primary factor or to call the result of such assessment a value results in grave confusion of thought and many practical mistakes.

A wise man has said that the really dangerous logical fallacies take the form of "question begging epithets." We call a thing by an old name which has a definite meaning and nine people out of ten will assume that it has the meaning which has gone with that name. If the legislature says that value is to be measured in a certain way it is assumed by nine people out of ten that public officials charged with administering the law who are carrying that idea out will measure value and not something quite different. This is particularly true in the Twentieth Century when advertising counts for so much, when we not only give a dog a bad name and hang him but too often give a dog a good name and exalt him.

Does this particular dog deserve the good name which has been claimed for him? Is it proper to apply the term value to an estimate based on cost of duplication? Those who say yes base their answers on several grounds.

Some say that there are different kinds of value, used for different purposes, and that cost of duplication gives a physical value for rate-making purposes. The answer to this is that physical value is a self-contradictory phrase which it is undesirable to use on every account. Value is not a physical phenomenon but a social one—not an inherent quality of objects, but a measure of their adaptation to social needs. It is wrong to take an old name which has had a fairly definite meaning and apply it to a new and self-contradictory concept.

Another group, intelligent enough to see that "physical value" is a self-contradictory and unmeaning term, admits that cost is not the same thing as value, but claims that it is a sufficiently good *measure* of value to warrant them in calling cost assessment by the name valuation.

But is it, in fact, a good measure? There are railroad lines in the country whose duplication cost will run up into many millions but whose

value to any possible owner is measured, at the utmost, by a few hundred thousand. The theoretical value, measured by this standard, is more than a thousand per cent greater than the actual value. A measuring rod that registers such errors is worse than none at all. The most that can be said of cost assessment is that it may fix an upper limit beyond which value cannot go. And fixing an upper limit of value is a very different thing from creating or measuring it.

A third group is clear-headed enough to see this and admit frankly that duplication cost does not measure value as it is, but claims that it furnishes a standard of value as it ought to be, in the interests of the public. This group argues that the small producer or seller of merchandise has to be content with getting back the cost of his goods plus a reasonable profit, and does not get that unless he has managed his business prudently; and that the owners of large units of invested capital should be content, and must be content, to accept the same standard of just compensation—say 6 per cent on prudent investment —as the limit of their gains.

This argument has been widely accepted, in courts and public service commissions as well as in legislative debate. If it were really sound it would in my opinion justify us in calling an assessment of prudent investment cost a valuation. Therefore, at the risk of reiterating some things which most of us already know, I shall try to show why this reasoning is misleading in theory and bad in practice.

Why does the value of merchandise in a free market conform pretty closely to duplication cost, while that of fixed investments does not? Because merchandise in general is movable and is pretty easily used up, while fixed investments have to stay in permanent position and are used up very slowly if at all. The consequence is that if a man cannot sell his merchandise in one market where there is a glut, he takes it to some other market where there is a scarcity; and if for the moment there is no market where it is scarce he stops buying it or giving orders to the factory to produce it until the extra supply on hand is sold. The result is that prices of merchandise tend to conform to the cost with slight variations and in relatively short times. That means that there is a fairly close correspondence between cost of each individual article and the market price as fixed by demand. But in the case of a power plant or a railroad or even of a house that a man has built as an investment, there is no such correspondence. The owners have invested capital in land whence it cannot be removed without great loss. To induce them to take the risk of that loss they must have a chance for a corresponding gain if the investment succeeds. The price of all the houses in the country may very likely average somewhere near their cost of production. But the price of the individual house may vary

much from this average. If any community was so impressed by Mr. George's theories that it passed a law fixing the price of a house on the basis of its cost of duplication, the building of houses stopped; because in case the owner had judged rightly as to location and demand, he was only allowed to get 6 per cent on his money, while if he had judged wrongly he had to bear the loss of a large part if not the whole of the principal.

The application of a similar method of "valuation" to American railroads has meant a repetition of the same mistake on a large scale. It began fifteen years ago. We can look over the results today. The construction of new lines has virtually stopped. There have been years when more were abandoned than constructed. Some companies have been unable to make improvements necessary to economy. Most others have had to run into debt, for there are very few companies that can sell new issues of common stock, and the creation of a preference is virtually running into debt. Meantime rates have risen as they always do when capital is discouraged from going into a progressive industry. Traffic which could more economically go by railroads if capital were given a fair chance is now going by automobile, overcrowding parking places in our cities and making the things almost as uncomfortable for the automobile owner as the railroad owner.

Such are a few practical results of the misapplication of the term value. When rightly applied it turns capital in the right direction. When wrongly applied it produces the opposite result.

This—if I may be allowed to pass for a moment from the immediate subject of my paper—is the reason why a rate-base assessed on cost is so apt to work badly. Unless the return allowed by the public service commission to successful companies is so high as to compensate for the risks of industrial progress—say 10 per cent at least—it discourages the investment of new capital. And a 10 per cent return to the successful company on what is popularly designated as its "value" is a thing which few commissions could openly allow—even if they saw that it was the only way to get the best service at the lowest rates, which most of them do not. Every first rate authority from Farrer down, I believe agrees that limiting profits, as a means for lowering rates, defeats its own end; but the temptation to save at the spigot and waste at the bunghole is almost irresistible when the public eye is fixed exclusively on the spigot.

Besides creating confusion in thought and error in practice, the attempt to use the same word for a true valuation and a cost assessment clouds our ideas of justice in a way that strikes at the very foundations of constitutional liberty.

One of the lessons of history is that a democratic form of government

in a complex state cannot last very long unless it protects property rights. Such rights have in times past been carefully safeguarded in America, not only by the temper of the people, but by the provision of the Constitution that no person shall be deprived of his property without due process of law. It is occasionally necessary in the public interest for the government to take possession of property which has been in private hands. But it has always been held that "due process of law" involved giving the owner a full commercial equivalent.

If we introduce a new use of the term value which directly or indirectly compels him to take a price assessed on the basis of cost, we have in fact taken property without compensation. Calling what is offered a value is simply adding insult to injury. If due process of law means that an owner must give up something that he and other people want very much indeed and take something else that nobody wants nearly as much, property right becomes a mere shell of what it was.

This is not a fanciful danger, it is a real danger. A great deal of our immigration comes from countries where people have had little experience in property holding and where they cherish impracticable ideals of what democracy can accomplish in the way of equality. Such men generally have a passion for justice. But it is an unintelligent passion; and if economists countenance the idea that cost measures value, they lead immigrants to think that Marx was right, and that economic justice is to be had through advanced Socialism.

Can we hope for protection from the courts? I doubt it. The Supreme Court itself is extremely reluctant to limit the power of legislatures to define the terms which they use. Even when the definition is obscure a court usually prefers to accept the interpretation of a public service commission. To preserve our constitutional safeguards we must get the commissions to see the consequences involved in accepting the prudent investment standard of value. To have any chance of securing this result we must ourselves call things by their right names, and not use old words in new senses. We must call assessment assessment, and valuation valuation.

Assessment is the fixing of a price by government authority. It differs radically from value in the fact that it depends on public authority—not on public demand. It is essentially a political term—not a scientific one. We fix an assessment; we ascertain a value. We ascertain the value of a piece of property by the same process of observation and calculation that we use in ascertaining the weight of a mass of metal or the size of a piece of land. Value in the accredited sense of the term—to come back to Walker's excellent definition—is the power which an object confers on its possessor independent of political author-

ity or personal sentiments to command the labor or products of labor of others. It is what an article is worth, sometimes in meeting an individual demand, more often in meeting a public demand, but it depends on demand in either case. Cost of production only enters into value indirectly by limiting the supply. A cost assessment neither produces value nor measures it.

RAILROAD VALUATION WITH SPECIAL REFERENCE TO THE O'FALLON DECISION

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In discussing a subject as broad as railway valuation in a time as short as thirty minutes I am faced with the necessity of leaving much of the field completely untouched. In order, however, to cover the more significant portions I shall be obliged to cut corners with ruthless disregard both for the literary and for the scientific proprieties. Thus, although the subject of this paper is railway valuation with special reference to the O'Fallon case,[1] I shall not attempt here to give even a résumé of that decision but shall be content to state that it may possibly become the great test case in which the principles of valuation accepted by the Interstate Commerce Commission will be subject to the scrutiny of the United States Supreme Court from the point of view of conformity both to statute and to the Federal Constitution. In bringing this problem to the test, counsel for the carriers raise numerous objections both to the detailed methods and to the general principles adopted by the Commission in fixing its valuations. Two issues, however, overshadow all others in their importance. The one is the question of depreciation, which may affect the values of the carriers to the extent of several billion dollars; the other is the controversy between the use of historical cost or prudent investment on the one hand, and reproduction cost at current prices on the other hand. It is this latter issue which became the bone of contention in the O'Fallon case, and it is solely to it that I shall confine my discussion in the present paper.

To be sure, neither in the O'Fallon decision nor in the other recent valuation decisions of the Interstate Commerce Commission is the issue between prudent investment and reproduction cost brought out in as clear-cut a manner as might be desired for purposes of scientific dissection. For on the one hand, what the Commission has approved is a valuation based on a compromised mixture of present land values, of reproduction costs at 1914 prices for old structures, and of estimated or recorded actual costs for new structures. And on the other hand, what the carriers contend for is a valuation in which current reproduction costs are given not the sole consideration, but simply the dominant consideration. But, with all due deference to this broad-minded eclecticism on the part of both contestants, it remains true that the

[1] Interstate Commerce Commission, Excess Income of St. Louis & O'Fallon Railway Co., Finance Docket 3908, decided Feb. 15, 1927; sustained in St. Louis & O'Fallon Ry. Co., etc., v. United States, etc., before a statutory three-judge Court acting in and for the Eastern District of Missouri. In equity 7859. Decided Dec. 10, 1927. Reported in *U. S. Daily*, Dec. 12, 1927.

Commission is basing its case largely on the supposed merits of the prudent investment theory, while the carriers are resting their case largely on economic arguments which accept in principle the doctrine of reproduction cost. We will, therefore, be doing no violence to the facts if we assume, in order to simplify this brief discussion, that the issue is clear cut and that it takes the form of a dispute between the Interstate Commerce Commission, which defends the principle of actual cost, or "prudent investment," as the proper rate base, and the carriers which assert not only the constitutional right but also the economic wisdom of the rival principle of cost of reproduction.

These two considerations—constitutional right and economic wisdom—are often argued separately by the writers of briefs for one side or the other of the controversy. It is solely the second consideration, however, that I shall discuss here. But this one-sidedness is not meant as a mere concession to the special interests of a conference of economists. It is to be excused rather on the ground that constitutional rights and economic wisdom, while they may seem to differ in the eyes of mere mortals, are generally seen to merge in friendly harmony by the immortals who sit on the supreme bench. For who would expect Mr. Justice Butler to hold that a rate base, though economically sound, was constitutionally rotten? And who can point to a dissent by Mr. Justice Brandeis, which admits that the economic merit is on the side of the majority, but insists that the inexorable law is on the other side? Once let the courts be convinced on the economics of the question, and the law in its majesty can be counted on to take reasonably good care of itself.

But even though we confine this discussion to the economic merits of the rival bases of rate control, we must still distinguish two different aspects of the problem. The one aspect is that of fairness to existing investors who have purchased their securities prior to the determination of any definite basis of rate control—the problem, in short, of *ex post facto* regulation. The other aspect is that of the correct policy for the future, after the question of fairness to present investors has been disposed of and when new investors are put on notice of the terms by which their profits are to be limited. Full recognition that these two problems are distinct has been achieved by students of rate control only within the last few years, due largely to the writings of Dr. John Bauer. And without such a distinction no really scientific discussion of the subject is possible.

I propose in this paper to take up the second phase of the question first. I shall assume, therefore, that any valid objection to the prudent investment basis on grounds of unfairness to existing security holders can be disposed of by extra allowances in the valuation of present

properties. The question of fairness thus being completely abstracted, we have simply to consider the economic expediency of the one base or the other as a means of developing an efficient railway system.

What, then, are the tests by which we should judge the relative merits of the two rate bases—prudent investment and cost of reproduction? Without offering them as exhaustive, I suggest the four following tests as covering the most significant subjects for consideration. *First,* the effect of the rate base on railway credit—on the ability of the railways to finance their capital requirements on terms of the lowest yield to investors. *Second,* its economy and feasibility of measurement and administration. *Third,* its repercussion on the efficiency of railway operation and construction. *Fourth,* its influence on the charges for railway service and its consequent effect on the volume of traffic. Each of these four aspects of the problem will be considered in turn.

1. *Relative Merits of Prudent Investment and Reproduction Cost as a Means of Attracting Capital.*—Barring the question of fairness to investors, which is expressly excluded for the present, the one point that is most frequently urged in favor of prudent investment is that its use will make possible the attraction of capital at the minimum rates of interest. But this is also the one point that is most frequently urged in favor of reproduction cost. The case for the former standard of valuation rests on the greater stability and predictability of income that is supposed to result from the application of actual cost. Most investors, it is argued, greatly prefer security of income to opportunity for speculative gains coupled with risk of corresponding loss. This fact is abundantly proven by the overbearing preference of investors for bonds and other fixed-interest-bearing securities rather than for common stocks. It is further attested to by the generally recognized fact that gilt-edge securities can be sold at a premium that exceeds the mere actuarial value of the relative freedom from risk of such issues. Reasoning from this premise, the supporters of actual cost contend that investors will prefer to invest in a railway which is permitted under all circumstances to earn a stated return on its contributed capital rather than to invest in a similar enterprise which may yield far greater returns if price levels go up but far smaller returns if price levels go down.

This argument for actual cost derives further support from the fact that the uncertainties of the reproduction-cost base are not confined merely to the risk of changing price levels. They are enhanced by the very indefiniteness of the term "reproduction cost" and by the wide differences of opinion that may prevail between appraisers as to what that cost really is. Today, the cost may be estimated at one figure. But who knows what the estimate may be when new appraisals are made

by the new engineers? Add to these two elements of uncertainty the further fact that the great expense of physical valuations make it impossible to reappraise except at infrequent intervals, and one has a still further item of risk arising from the uncertainty as to when a new appraisal and a new rate revision will take place.

No one can fairly deny that these points constitute a strong case for the use of actual cost. How then, do the advocates of the rival basis of reproduction cost meet the issue that has just been raised? It is significant that within the last few years the nature of their reply has been materially shifted. Formerly the argument was made that only by the use of a rate base like reproduction cost, which permits railway investors to take advantage of the unearned increment in land values, could capital be induced to flow into regulated enterprise rather than into competitive industries. As long as other fields of investment are permitted to hold out the lure of a possible unearned increment, railway enterprises, it was argued, must be free to hold out the same lure. It is significant, I think, that one seldom meets with this form of argument today, for its shallowness must be apparent to anyone who is in the least familiar with the capital market. It is true that some kind of a balance of advantages must be preserved between the market for railway securities and the market for other securities, but it by no means follows that these advantages need to be of the same nature in both cases. The United States Government in selling $3\frac{1}{2}$ per cent bonds is under no necessity of attaching to these instruments the same speculative bait that must be attached to an issue of oil stock appearing on the market at the very same time. Similarly, there is no reason why railway and utility bonds and stocks cannot be made attractive by measures that guard the investor against the risk of decrements just as well as by measures that offer him the possibility of increments.

Recognizing the weakness of their previous position, supporters of reproduction cost have recently shifted their line of attack and have adopted the strategy of meeting their rivals on their own ground. What they now emphasize is that the much vaunted stability arising from the use of actual cost is an illusion—a mirage resulting from our proneness to think in terms of pecuniary values rather than in terms of purchasing power. For a return that is constant in terms of dollars and cents is highly inconstant in terms of commodities that can be bought with these dollars and cents. Only the latter type of constancy is really a virtue, but that can be obtained, not by a rate base which remains fixed, as does prudent investment, but only by a measure which expands and contracts with changing price levels.

As a criticism of the use of prudent investment in its usually accepted form the above argument must, I think, be conceded to have much force.

As a defense of the alternative rate base (reproduction cost), however, it breaks down dismally. There are two reasons for the breakdown. In the first place there is the fact, repeatedly emphasized by defenders of prudent investment, that no stabilization of security incomes on the basis of purchasing power (rather than on the basis of pecuniary yield) is possible as long as railway capitalization is composed so largely of bonds and preferred stocks with income claims fixed in terms of dollars. Just as long as this capitalization remains outstanding, the use of a rate base—like reproduction cost, which shifts the valuation of the entire property up and down with changing price levels—would result simply in causing the incomes on common stocks to fluctuate more wildly than ever, while leaving the incomes on senior securities fixed in terms of money, as always, or else subject to the uncertainties of a default and a corporate reorganization. Certainly this contingency does not offer a tempting prospect to anyone whose interest lies in stabilizing the real incomes earned on railway securities.

Supporters of the principle of reproduction cost have not been able to ignore this counter attack based on the financial structure of railway and utility corporations. They have replied, however, that the same split-up of income claims into bonds, preferred stocks, and common stocks takes place in unregulated enterprises, with the result that the common stockholders in these enterprises must bear the brunt of all changes in price levels, and they have asked why the investors in railway and utility securities should be subject to any different rule. It would seem hardly necessary to point out that such a retort simply begs the question. This question is whether the use of actual cost or of reproduction cost will result in a closer approximation to the ideal, accepted by both sides, of a stabilized return as a means of attracting capital at lowest possible yield. The mere fact that no such stability prevails with respect to the securities issued by competitive industries is wholly irrelevant.

But there is a second weakness in the position of those who defend reproduction cost on the ground of its effectiveness in stabilizing *real* incomes. I refer to the discrepancy—in many cases the wide discrepancy—between changes in the index of the cost of living and changes in a rate base measured by cost of reproducing the railway property. If the return on railway investments is to be stabilized in such a way as to compensate for changes in the purchasing power of the investor's income, then the use of reproduction cost as a device to secure this stability can be effective only on the assumption that changes in the costs of railway and utility construction correspond fairly closely to changes in the costs of living. Have we good reason to believe that this close correspondence exists? On the contrary, our experience points to

highly significant divergencies. For example, the Interstate Commerce Commission, through its Bureau of Valuation, has come to the conclusion that during a period of twenty years prior to 1914, costs of railway construction remained approximately stable despite a rise of about 30 per cent in the index of wholesale commodity prices.[2] This result is explained on the ground of the gradually improving technique of railway construction. The same discrepancy between changes in general price levels and changes in construction costs has been shown to prevail with respect to local public utilities. In the November issue of the *Journal of Land and Public Utility Economics*[3] are published estimates, secured from various sources, as to recent changes in the unit costs of utility construction. Between the years 1913 and 1925, when the Bureau of Labor's All Commodity Index of Wholesale Prices showed a rise of 58.7 per cent, these estimates indicate an increase in construction costs of 67 per cent for telephone properties, 78 per cent for electric light and power systems, 102 per cent for electric railways, 130 per cent for artificial gas properties, and 133 per cent for water supply systems.

It is to be remembered, moreover, that these observed differences refer simply to the discrepancy between general price changes and changes in the costs of reconstructing *substantially identical* railway and utility properties. If the basis of rate control is taken to be cost of reproducing, not the identical plant, but rather the service, by means of the most modern types of machinery and construction—and this is precisely the type of reproduction cost which most economic theorists support as in harmony with the theory of competitive prices—then the discrepancy between changing general price levels and changing returns to investors would be far greater. A single important improvement in the technique of production, such as has already resulted from the development of the steam turbine, or the introduction of giant generating units, might well require companies equipped with the older machinery to submit to a rate reduction that would wipe out a large part of the stockholders' equity; and this would occur without any change in the index of the cost of living. Certainly income stability is the last thing that could be claimed for a rate base of this type.

In pointing out what I believe to be the two fatal weaknesses in the case for reproduction cost as an income stabilizer, I have no desire to overlook the fact that the alternative base of prudent investment, in its generally accepted form, is not exempt from the same criticism. To be sure, if a choice must be made between prudent investment

[2] Excess Income of St. L. & O'Fallon Ry. Co., *supra*, pp. 41-2, citing Texas Midland Railroad, 75 I.C.C. I, at p. 140.

[3] Paul Jerome Raver, "Index Numbers of Public Utility Construction Costs," *Journ. of Land and Public Utility Economics*, III (Nov., 1927), 343, 359.

in its unmodified form and reproduction cost, then the former basis is likely to result in a less serious fluctuation of real incomes than is the latter basis. But one should not rest content to make this choice of evils without seeking a way out of the dilemma. A possible way lies open. It is to accept the standard of prudent investment but to use as the measure of that investment, not the historical *money* cost but the historical *real* cost. In other words, the rate base might be made to vary, not with changes in the cost of railway construction but rather with changes in an index of the cost of living. This revised measure of prudent investment, however, should be used only to the extent that the capitalization of the railways is also modified in such a way that the incomes payable to the various security holders can be adjusted for the changing price level. There are two possible ways of securing this result. The one is to call in all bond and preferred stock issues, and to issue instead nothing but common stock, on the precedent of our commercial banks. The other and more plausible way is to continue to sanction the issuance of various classes of preferential securities, but to make the interest on these issues payable in terms of purchasing power rather than in terms of a fixed number of dollars per annum.

I shall not venture an opinion in this paper as to the feasibility of any so radical a readjustment in the capital structures of our railways. Many will doubt whether such a wholesale reorganization would be feasible except perhaps as a gradual development over a period of years. Others will hold that even if this change in capitalization were possible, it would not be desirable, because investors are so habituated to bonds payable in a fixed number of dollars that they would be reluctant to buy securities payable in purchasing power. Doubts of this nature may or may not be justified. I am simply indicating here that if we are serious in our insistence that rate control must be so developed as to stabilize real incomes, then we must resort to a very different means of accomplishing our subject from the wholly ineffective means suggested by the supporters of the doctrine of reproduction cost. It is not at all likely, however, that defenders of reproduction cost will accept any such compromise as is here suggested. For they have other reasons, soon to be discussed, for desiring an unconditional acceptance of their particular type of rate control. By means of a reproduction-cost base they hope to secure for the investors a rough approximation to a stabilized real income at the same time that they secure for the shipper the advantages of what they call a "competitive price." This attempt to hit two birds with one stone is a laudable and sportsmanlike attempt in principle. But unfortunately it is doomed to failure in this case, for the two birds happen to be sitting on such widely distant branches that they cannot both be touched even with a blunderbus.

Before leaving the subject of the ease of attracting capital as a test of the rate base, it is only fair to mention one further objection raised by critics of prudent investment. This objection is that in a period of low prices, during which the cost of reproducing a railway may fall far below its original cost, the public could not be counted on to live up to its agreement to allow a return on the higher actual cost. For with other prices falling, the pressure of public opinion in favor of a corresponding reduction of railway rates would be too strong for administrative bodies, and even for the courts, to withstand. It follows, therefore, that the assurance of income stability which the actual cost basis seems to provide is specious rather than real and that investors, if they are intelligent, will not easily be induced to buy railway securities on any such dubious understanding.

This argument is not without force; and it deserves a far more extensive discussion than I shall have time to give it in the present paper. I believe, however, that its significance is greatly exaggerated for the following reasons. In the first place, the uncertainty as to whether a basis of valuation, when once adopted, will be adhered to by the public through thick and thin, regardless of which foot the shoe pinches, is an uncertainty that cannot be avoided no matter what particular method of valuation is accepted. If actual cost be adopted, there is the question whether political pressure may not require a shift to cost of replacement when that figure is the lower one; if cost of reproduction be adopted, there is the converse question whether actual cost may not be insisted upon when the current prices are higher than historical prices. It is argued, to be sure, that public pressure in the latter case will be by no means as insistent as in the former case, since high railway rates can be more easily borne in a period of high general prices than in a period of low general prices. But if anyone makes that argument let him look at conditions prevailing at this moment in the railway field. Despite the fact that we have been passing through a period of prosperity and of high prices unexampled in the history of this country, not only have the railways been refused the right to earn anything approaching a current rate of return on their estimated reproduction cost, but a large group of them has admitted before the Interstate Commerce Commission that, even if they were to receive official permission to earn such a return, they would be unable to do so because of the fact that the traffic would not bear rates sufficiently high to secure this object.[4] "It is highly improbable," writes the editor of the *Railway Age*, in an editorial supporting some form of compromise between the Commission's valuations and a value based on current re-

[4] Revenues in Western District, 1925, 113 I.C.C. 3. See also The Commission's O'Fallon Decision, *op. cit.* p. 32.

production cost, "that it would ever be possible to get the railways to agree to seek an advance in rates sufficient to give a so-called fair return on a reproduction cost valuation. Their managers would know that if they did so they would encounter the united opposition of regulating commissions and shippers, and would arouse public sentiment more hostile than ever existed before. Railway officers fully realize that rates should be made not only in accordance with what the traffic will bear, but also in accordance with what public sentiment will stand."[5]

It is not to be denied that the failure of public opinion and of traffic demands to support a return on reproduction cost does not justify the defenders of prudent investment in assuming that a return on *their* rate base will always be allowed. There are reasons for thinking, however, that greater assurance can be given to investors as to the maintenance of a return on actual cost than can be given as to a return on reproduction cost. For the use of the actual-cost principle makes it feasible for the government to allow railways to earn during times of prosperity a return in excess of a fair rate of income, the excess to be reinvested in the property as a surplus which will help to insure the maintenance of established earning power and dividend distributions, but without being added to the rate base on which future returns must be calculated. The great protection that these large reserves would give security holders will, I think, be readily admitted. But as long as cost of reproduction, or any so-called "present value" principle is adopted, it becomes very difficult if not impossible to distinguish between capital that is entitled and surplus that is *not* entitled to a return.[6] And this being the case, the public will naturally and properly be reluctant to allow the excess earnings necessary to establish these reserves.

For the reasons just outlined, I conclude that, judged by the test of effectiveness in attracting capital, the decided weight of the argument lies on the side of prudent investment rather than on the side of reproduction cost.

2. *Administrative Convenience as a Test of the Two Bases of Rate Control.*—The second test of a desirable basis of rate control is the economy and convenience of administration. Important as this consideration is, I shall pass it by with scant notice in this brief review, for it is a subject far less controversial than are many of the other problems. Indeed, most advocates of reproduction cost are themselves quite ready to concede that the difficulties of estimating and keeping their

[5] *Railway Age*, LXXXIII (December 10, 1927), 1147.

[6] Consistently with its announced standard of "present value" as the rate base, the Supreme Court has held that no distinction should be made between property built up out of excess earnings and property constructed from capital contributions or from funds however else acquired. Bd. of Pub. Utility Commissioners v. N. Y. Tel. Co., 271 U. S. 23 (1926); Galveston Elec. Co. v. Galveston, 258 U. S. 388 (1922).

rate base up to date are far greater than are involved in the application of the prudent investment base. Reproduction cost involves the necessity of recurrent physical valuations. These valuations are exceedingly expensive; they are necessarily based on highly speculative and even hypothetical assumptions; and they become obsolete with changes in price levels, and with the development in the technique of construction. All this involves very heavy direct expense both upon the government and upon the railway. But the direct expense, heavy as it is, constitutes the least serious of the objections. Far more serious is the drain of energy imposed upon the regulating commission and upon the carrier in fighting out the many disputes that must constantly arise where so indefinite and hypothetical a standard of rate control is adopted as is indicated by the term "reproduction cost." The unfortunate result of this state of things is that regulation tends to become, not a co-operation between the government and the utilities in attaining the common goal of public service, but rather a perpetual quarrel.

3. *Effect on Efficiency as a Criterion of the Rate Base.*—The third consideration which may affect the choice of a rate base is that of efficiency.[7] Critics of the prudent investment base as a principle of rate control have frequently asserted that its great defect lies in its tendency to discourage initiative in promotion and in management. This result is assumed to follow from the fact that a return based on the invested capital rather than on the value of the service rendered gives no financial inducement to improve the service beyond a point that will make possible the maximum rate of return. It is from this point of view that the prudent investment base is attacked by President Hadley, who writes in a recent article that "the use of cost of plant, and especially original or historical cost, as a *rate base* is wrong in principle and often dangerous in practice."[8]

Before conceding the force of this criticism, we must distinguish more clearly between the alternatives which the critics would themselves substitute for the use of actual cost. Some writers, like President Hadley, apparently oppose the use of any rate base whatever, irrespective of whether this base be actual cost or cost of reproduction. They would abandon entirely any direct control of railway profits and would resort to regulation only to compel a railway in one community to conform its charges to the rates voluntarily charged for the same service by railways in other communities. For some reason which they do not state explicitly, they feel that if some sort of income restriction must

[7] I use the term here in its broadest sense, to cover, on the one hand, economy and wisdom of construction and, on the other hand, efficiency of operating management.

[8] "Principles and Methods of Rate Regulations," *Yale Review* (April, 1927), p. 417 p. 432.

be tolerated for political reasons, then the use of reproduction cost rather than original cost as the rate base is the lesser of two evils—possibly because at the present time cost of reproduction makes such a high ceiling that few railways will bump their heads against it in practice. But their primary objection is to any direct control of general rate levels whatsoever rather than to any one particular type of control.

I regret that the limits of time prevent me from attempting in this paper to discuss the position taken by these opponents of any kind of rate base. Their position is a plausible one, and it deserves respectful consideration in any thorough-going discussion of the problem of railway rate control. I may say in passing that its weakness seems to me to lie first in an unwarranted assumption that the *general level* of railway rates throughout the country will automatically come to a proper equilibrium and therefore that the only problem for the regulator is to force the rates of the isolated and peculiarly recalcitrant railway into line, and second in the failure to recognize that different companies operate under such highly different conditions of cost and of density of traffic that a rate of charge which is more than sufficient for one company would be utterly inadequate for another company. But I pass this point because the issue that is immediately pressing upon the Interstate Commerce Commission and upon the courts of this country is the issue between one type of rate base and another, rather than the issue between the use or disuse of any rate base at all.

When the problem is thus narrowed, the question of efficiency is not difficult to dispose of. For whether the rate base be cost of reproduction or historical cost, there is an equally definite limitation of profits over and above what is regarded as a fair return, and there is therefore precisely the same difficulty with respect to the impairment of efficiency. To be sure, it is possible, though difficult, to devise ways and means of giving special returns, over and above normal interest rates, to companies that have made a high record of efficiency. Or, again, it is possible to encourage efficiency by the very plan that is in operation under our present Transportation Act—that is to say, by the plan of placing railways in a group, of allowing the railways in each group to earn a specified combined return on their total invested capital, and then of recapturing only a fraction of the earnings of any individual company that succeeds in earning more than a normal rate of income. But all these experimental and perhaps doubtful devices for stimulating railway efficiency are just as applicable to the one type of rate base as they are to the other type—and just as necessary.

To the statement just made, that the choice of the one rate base or the other is a matter of indifference so far as concerns the effect on op-

erating efficiency, one qualification must admittedly be made. If the real alternative were, not between actual cost and cost of reproducing a substantially identical property, but rather between actual cost and cost of reproducing the service by means of a hypothetical new property, then the advantage of encouragement to efficiency would clearly rest on the side of reproduction cost. For if rates were based on this latter kind of a cost estimate, then it would follow that any saving in operating expenses that an existing railway could make would redound to its benefit. For reasons that will be stated presently, however, I believe the standard of cost of reproducing the service to be out of the question on grounds of practical expediency. I therefore believe the only practical alternatives to be actual cost on the one hand and cost of reproducing a substantially identical plant on the other. And it is on this assumption that the position is here taken to the effect that neither the one base nor the other can claim any distinct advantage from the point of view of operating efficiency.

Before passing this subject, however, one should note another phase of the efficiency problem which has been touched upon by some of the supporters of cost of reproduction. The point has been made that the use of actual cost would encourage the construction of public utility and railway property at periods of high prices whereas the adoption of cost of reproduction would cause promoters to do most of their construction work when prices are low, in order that they may take advantage of a rising rate base. The former practice is supposed to be socially undesirable and the latter practice socially desirable, because of the wisdom of engaging in building construction when labor and capital are less actively employed in the production of other things. This is indeed an ingenious argument, and it seems to be in line with modern thought in seeking ways and means of reducing the severity of the business cycle. I question, however, whether it is of sufficient merit to carry much weight in the balance of considerations for and against the two rival principles of rate control. In the first place, the fact that future price changes are extremely difficult to predict will prevent even the most astute promoters and financiers from basing their construction programs with any confidence upon their forecast of an upward or a downward trend. But even if this obstacle were not serious, I strongly doubt whether it is socially desirable to place a premium on railway construction during low-price periods and to place an obstacle on construction during high-price periods. Does not the whole question depend on what factors are causing the price changes? If we assume, as the defenders of cost of reproduction seem to assume, that a period of high prices means a period of great business activity and that a period of low prices means a period of depression—if we assume, that is, that

the ebb and flow of prices corresponds with the ebb and flow of the business cycle—then we might welcome any policy of rate control that encourages the construction of utilities during the low-price periods. But where the change in prices is due, not to the cyclical trend but to the secular trend, where it is due, for example, to a changing ratio between the volume of money and the volume of business, then I see no reason why a low-price point on this trend-line is any more to be preferred for railway construction than a high-price point. Would it have been wise, for example, to have placed a check on railway building during the earlier part of the period from 1865 to 1897, when prices were falling, and to have stimulated construction during the first part of the period from 1897 to 1920, when prices were rising? And if we may assume that prices during the next twenty years will be on the down grade, is that any reason for adopting a policy of rate control which will cause entrepreneurs at the present time to hold back their projects for railway development? I very much doubt whether the very men who defend cost of reproduction on this basis would be willing to contemplate any such results.

4. *Reproduction Cost as a Device for Maintaining Rates at Competitive Price Levels.*—I come now to the final test of an effective rate base to be discussed in this paper. It concerns the argument advanced by many writers that reproduction cost is to be preferred to actual investment because it is the only rate base which will cause the prices of monopoly services to approximate the prices that would be reached by the automatic forces of competition. Few of these writers, to be sure, have taken the pains to point out just why they regard the competitive price system as such a paragon of virtue as to justify emulation on the part of monopolistic enterprise. They have generally been content to assume their standard as an axiom instead of proving its desirability by economic analysis. Exception, however, must be made in the case of at least two writers, whose vigorous pleas for the use of reproduction cost constitute the ablest and most telling briefs for that theory of rate control that have yet come to my attention. I refer to Professor Harry Gunnison Brown, whose trenchant attacks on the use of actual cost[9] are familiar to all members of this Association, and to Mr. F. G. Dorety, Vice-President and General Counsel of the Great Northern Railway, whose able briefs[10] on behalf of the carriers, made before the Interstate Commerce Commission and before

[9] Brown, *Transportation Rates and Their Regulation,* N.Y., 1916; Brown, "Railroad Valuation and Rate Regulation," *Jour. of Polit. Econ.,* XXXIII (October, 1925), 505-530; Bauer and Brown, "Rate Base for Railroad Speculation," *ibid,* XXXIV (August, 1926), 479-513.

[10] The substance of the arguments in these various briefs is stated by Dr. Dorety in his article, "The Function of Reproduction Cost in Public Utility Valuation and Rate Making," *Harvard Law Review,* XXXVII (December, 1923), 173-200.

the reviewing courts, are almost unique among the pleas of railway counsel in being free from the taint of the familiar "vicious circle" fallacy. These two writers, whose views seem to be in general sympathy, have brought serious indictment against the prudent investment basis of rate control. It remains to consider whether the indictments can properly be dismissed.

To illustrate their criticism of actual cost, the writers to whom I have referred assume the case of two railways connecting the same two termini—the one railway having been built at a low cost during a period when construction prices and land values were low, and the other railway having been built at a high cost during a period of high prices. Competition will necessarily force these railways to charge the same rates between the two common points. But a rate sufficient to yield a fair return on the actual cost of the low-cost road will be far from adequate to yield a fair return on the actual cost of the high-cost road. The conclusion drawn from this illustration is that actual cost is unworkable as a rate base and therefore that rates for both roads alike should be fixed at such prices as would induce the construction and operation of a new railway.

It is true that defenders of the prudent investment basis have sometimes replied to this criticism by asserting that the case of the directly competing railways is the exception rather than the rule and that the whole difficulty can be avoided by a railway consolidation on the recent British pattern, which largely avoids competition. But to this argument the defenders of reproduction cost, and notably Professor Brown, answer that the attainment of complete monopoly, even if it were feasible, would fail to cure the economic waste resulting from the fixing of rates on the basis of historical rather than present costs. In order to bring out his point, Brown assumes among other hypotheses the case of a railway which has been built in a period of low costs but which would now cost very much more to reproduce. Even if that railway has a monopoly of service, it would be committing an economic crime to charge rates so low as to earn nothing more than a return on its historical cost. For the low rates would sooner or later stimulate a traffic demand which would require the building, either of a second separate road, or else of additional tracks. But these new structures are not socially worth building unless they are needed to serve traffic which is so important that it can bear the high rates necessary to yield a normal return on the high construction costs. As long, however, as government insists on basing rates on actual cost, the low capital costs on the old structure will be averaged in with the high capital costs on the new structure, and a rate of charge will result which will stimulate new traffic unable to pay the high additional costs of providing it.

The above arguments of Brown and Dorety in defense of reproduction cost constitute what seems to me to be the most plausible case that can possibly be made for the point of view which they represent. And it is only fair to say that few supporters of the doctrine of historical cost have given to this criticism the attention which is its due. Nevertheless, I am still of the opinion that the criticism does not suffice either to condemn the rate base which it attacks or to justify the rate base which it supports. My reasons for holding this view are two fold.

In the first place, one must bear in mind that the arguments adduced by Brown and Dorety are valid, if at all, only on the assumption that cost of reproduction is taken to mean cost of reproducing, not a similar plant, but rather a similar service. The distinction between these two standards has frequently been recognized in principle, but the extent and vital import of the distinction has been quite generally overlooked. A rate fixed on the basis of cost of reproducing the service is a rate fixed with no direct reference to the earnings necessary in order to pay operating expenses plus a fair return on any existing property. It is a rate deemed sufficient to pay the operating expenses and capital costs of a hypothetical *new* property, a property of the most modern construction, and located on the best available line of traffic. How very markedly such a rate would probably diverge from a rate fixed on the more conventional basis of cost of reproducing a substantially identical property, will be admitted by every student of the problem. Yet it is the former rate and not the latter to which the arguments of the writers under discussion apply. For example, the difficulty of the two competing railways whose obligation to charge identical rates was cited in proof of the impracticability of the prudent investment base, can no more be solved by means of a rate base measured by cost of reproducing the identical properties than it can by means of a base measured by historical cost. Is it not clear, for example, that a level of trunk-line charges sufficiently high to cover the operating expenses plus a normal return on the replacement cost of the New York Central would by no means yield the same return on the replacement costs of the Pennsylvania, the Baltimore and Ohio, and the Erie? Obviously, it is only by resort to a hypothetical, non-existent standard railway that the problem can be solved in the way in which the supporters of reproduction cost would solve it.

All this, I take it, would be conceded by the very writers with whom I now take issue. What they do not concede, and yet what I think must sooner or later be conceded by everybody, is that the use of cost of reproducing the service as a basis of rate control is utterly out of the question on practical grounds. Even disregarding the question whether or not it would be feasible on financial grounds, even overlooking, that

is, the serious doubts whether investors could easily be induced to contribute capital to an enterprise whose rates may be no higher than the rates that could be charged by new and modern plants, one must still reject the proposed rate base because it can never be intelligently measured. In all verity it is difficult enough to estimate the cost of replacing a property that is actually existing and operating. What shall we say, then, of a standard of rate-making which requires the Interstate Commerce Commission to base rates, not on the replacement costs of the existing New York Central system, but, rather, let us say, on the probable operating expenses and probable capital costs of the proposed Loree trunk line? It goes without saying that no such rate base *will* ever or *can* ever be enforced. It is a foregone conclusion that reproduction cost, if adopted at all as a standard of rate control, will turn out in practice to mean cost of reproducing a substantially identical plant with deductions, if any, only for the grossest and most measureable forms of obsolescence and inadequacy. This, indeed, is the kind of reproduction cost to which the Supreme Court seems to have given approval in its numerous dicta in support of "present value." But it is far from being the kind of reproduction cost that derives support from the economic arguments of Dorety and Brown, based on their theory of competitive prices.

But even if I am wrong in feeling that cost of reproducing the service is not a practicable rate base, there remains a theoretical flaw in the defense of cost of production which is almost equally fatal. I refer here to the argument, developed at such length by Brown, that rates fixed on the basis of reproduction cost will encourage just enough but not too much railway construction to meet the economically justified traffic demand. The theory that Brown relies on here will be recognized by all economists as good orthodox economics. But the inference which he draws from this theory involves a serious, indeed a fatal, fallacy. The fallacy lies in the failure to recognize that in deciding whether a certain additional amount of traffic is economically worth the cost of supplying it, one must take account not of the average cost of furnishing all the traffic, but simply of the marginal or differential cost resulting from the extra traffic. Let us assume, for example, that a certain community is served by a single, monopolistic railway, and that on this railway the traffic demands have grown to the point where no more transportation can be furnished except by the addition of an extra track. In deciding whether or not the new track should be built, our answer, on Brown's own doctrine of competitive prices, must depend on whether or not the *extra* earnings derived from the new traffic will cover the *extra* operating expenses and *extra* capital costs incurred in building and operating the new track. But anyone who is

at all familiar with the principle of overhead costs will concede at once that rates thus fixed by reference to differential costs will differ widely from rates so fixed as to yield a return on the reproduction cost of the entire railway property.

Because this fallacy underlying Brown's defense of reproduction costs seems to me to be fatal to his whole case, I venture to give another illustration of the point that I have in mind. The actual investment in the property of the Chicago, Milwaukee and St. Paul Railroad is stated on the books of the company at approximately 700 million dollars. Its cost of reproduction at present prices would be, let us say, 40 per cent higher or roughly 1 billion dollars. Yet this railway, because of the sparseness of the country which it serves, and because of the competition of other carriers, earned during 1926 a return of less than 3½ per cent on its book-value. Suppose, now, that we attempt to fix the rates to be charged by the St. Paul Railway, wholly without regard for the financial needs of the company, but simply with reference to the question of encouraging just as much traffic as is economically worth encouraging. What rate level shall we fix? A level sufficiently high to secure a normal return on actual cost? Or sufficiently high to provide the same return on reproduction cost? Obviously neither. The rates which we must fix should be high enough only to cover the bare operating expenses without leaving any surplus whatever for a return on capital. For since the capital has been irretrievably invested in the property, and since the capacity of the line is far in excess of any possible traffic demands, and will almost certainly remain that way for years to come, it follows that any traffic which can pay variable costs will be economically worth carrying.

In citing this illustration I by no means mean to imply that I believe it feasible to base railway rates by reference simply to variable rather than to total costs of transportation. The case is cited here simply in order to show where one is carried if one accepts the logic of the theory of competitive prices on which the defense of reproduction cost is based. Even Professor Brown, who is the leader in this type of defense, recognizes in a measure the dilemma in which he is placed. For while conceding that prices based simply on variable costs would come closest to meeting his ideal as a regulator of socially desirable traffic, he recognizes that the application of such a principle would be quite impossible on grounds of financial expediency. In so doing, however, he seems to me to abandon his whole case for reproduction cost. For there is little or no reason to assume, *a priori*, that railway rates based on the cost of reproducing the entire property would come closer to securing the advantages of a rate structure based on differential costs than would railway rates based on the principle of prudent investment. Indeed,

in the St. Paul case and in the case of other prematurely built railway properties, precisely the reverse relation is to be found as long as prudent investment remains lower than cost of reproduction.

In stating, as I have just done, the reasons for rejecting the plausible arguments adduced by the supporters of reproduction cost, I have no wish to overlook the difficulties that they point to with respect to the rival rate base, actual cost. Indeed, the mere existence of direct and indirect competition among railways is alone enough to make impossible, even if it were desirable, the fixing of rates of charges at such points as to yield no more and no less than a fair return on the actual prudent investment in each railway. And even if such an object should become attainable by the consolidation of competing railways, it would not always be desirable because of other economic considerations which must be taken into account in fixing a proper traffic charge. The solution of the difficulty, however, is to be found in the necessary and vital distinction between those complex factors that must control the schedule of railway charges and those relatively simple factors that should control the allowance of a return to the investors. In short, railways should be allowed to charge rates which allow to many of them a gross return materially in excess of a fair profit on their investment. A large part of this excess return should either be recaptured in the form of an excess profits tax, or else it should be reinvested in the railway as a surplus not entitling investors to any additional return. The former practice has already been initiated by the Transportation Act, in the form of the famous recapture clause. The latter practice has been successfully applied for years in Massachusetts with respect to their local public utilities,[11] althought it unfortunately threatens to come to grief because of the *force majeur* of our courts with their doctrines of "fair value."[12]

5. *The Fairness of the Interstate Commerce Valuations to Existing Investors.*—In discussing the relative merits of prudent investment and cost of reproduction, I have so far expressly assumed that the difficulties arising from the *ex post facto* application of either principle could be disregarded. I have, therefore, deliberately overlooked the one question that is uppermost in the minds of judges when they are required to pass upon the constitutionality of the rates that are fixed by a public service commission—the question, namely, of the fairness of the rates to investors who have already contributed their capital prior to the announcement by the government of a definite standard of

[11] See, e.g., Bay State Rate case (Mass. P.S.C.) P.U.R. 1916 F, 221, and more recently Worcester Electric Light Rate case, Mass., Dept. of Pub. Utilities, June 8, 1927.

[12] See Fall River Gas Works v. Gas & Electric Light Commissioners, 214 Mass. 529, 102 N. E. 475 (1913), a capitalization case.

rate control. But the problem of *ex post facto* regulation can no longer be dodged. In the remainder of this paper, I shall therefore completely shift the point of approach. I shall assume that the principle of prudent investment has been accepted as the desirable policy for the future and that the only question at issue is whether it can fairly be applied retrospectively to existing railway property, or whether it should be subject to some modification designed to protect the vested interests of security holders who have purchased their securities under the old régime. To put the question more concretely, should we use as the initial rate base the Interstate Commerce Commission valuations, which represent a modified and liberalized estimate of historical cost, or should we begin with some other basis, such as reproduction cost at post-war prices, to which additions and subtractions may be made only for new money contributed and for old property withdrawn?

The general principle by which this question of *ex post facto* fairness should be tested is as clear as its application to the practical problem is difficult. A fair rate base—fair, that is, to railway security holders—is a rate base that does not unduly destroy property values which reflect the reasonable expectations of investors. It is a rate base that avoids too serious a break, at the expense of property owners, in the continuity of governmental policy. Thus, for example, if year after year the custom had prevailed of allowing our railways to earn 10 per cent on the book values of their property, and if in consequence dividends had been established and securities had been widely bought and sold on the faith of this practice, it might well be deemed unfair for Congress or for the Interstate Commerce Commission suddenly to destroy that long-established expectation by setting up *de novo* a lower rate base or a lower rate of return. And the unfairness would be just as great regardless of whether the new lower rate base happened to correspond to actual cost, or to replacement cost, or to any other test that might recently have been found to be desirable.

Unfortunately, however, the problem that presents itself at the present time is by no means as clear-cut as is the one that was assumed in the illustration just given. For instead of a change from one definite standard of rate control to another equally definite but different standard, what we now face is the prospect of adopting for the first time in our history any definite standard at all. And, since governmental policy in the past has been so indefinite, it necessarily follows that the reasonable expectations of investors must also be indefinite. We cannot say, for example, that railway investors have been put on notice that they may earn a return based on actual prudent investment, for no such doctrine of rate control has ever yet been adopted or enforced; but neither can we say that investors have been given the right to

expect a return on current reproduction costs, for never have railway rates been controlled on any such principle. It is not to be denied that the courts, under the leadership of the Supreme Court, have expressed within recent years increasing sympathy for the use of reproduction cost as the dominant factor in the rate base; but these judicial utterances have never yet determined the standards by which railway rates have in fact been controlled, nor is it likely that they have had more than a minor effect on the values of railway securities as fixed on the stock market.

At best, then, the situation is a bad one, and we may as well admit at the outset that no adjustment of the rate base is practicable that will avoid completely an interference with the reasonable expectations of some security holders. It is submitted, however, that if any type of rate base can be singled out as being more fair to existing investors than any other, its merit in this respect must rest, not on any inherent fairness of the principle of prudent investment, or of the rival principle of reproduction cost, but rather in the fact that it will result in the least possible disturbance to the earning power that the railways have already developed under such rates as they have already been allowed to charge. To put the case negatively rather than positively, if the valuations that are now being prepared by the Interstate Commerce Commission are going to require drastic, unexpected cuts in railway revenue, if they threaten to result in a wholesome passing of established dividends, in unanticipated bankruptcies, and in serious permanent declines in stock market values, then railway investors have good ground for complaint that their property rights are being unjustly ignored, and that their vested interests in a reasonable continuity of governmental policy are being disregarded. But if, on the other hand, these valuations will not seriously interfere with established earning power, still further, if they will allow a leeway for many railways to expand their earnings without exceeding the allowable limits on their returns, then they can hardly be subject to the charge of excessive harshness against existing investors. In short, the very item that is properly ruled out of account in deciding upon a sound rate base for the future—namely, earning power at established rates of charge—is rightly to be given dominant weight in deciding upon an initial rate base for properties that have been constructed prior to the announcement of a definite plan of rate control.

It is, doubtless, for reasons such as these that the British Parliament, that stronghold of the doctrine of vested property rights, in establishing its recent new system of railway rate control, has directed the Rates Tribunal to fix such charges as will, as far as practicable, yield to each of the great amalgamated companies a net revenue equal

to that which was earned during the latest pre-war year, 1913, with extra allowances for capital contributed since that date, and with further allowances for previous capital expenditures that enhance the value of the railway but that had not at the beginning of 1913 become fully remunerative.[13] And one may fairly raise the question whether our own government might not well have followed a similar principle in the Transportation Act, just as it has already done, in fact, with respect to the compensation guaranteed to the carriers for the period of governmental operation during the war.

But however one might be disposed to answer such a question, I assume that at this late date it is no longer a practical issue. I take it that the country has become so deeply committed to a scheme of rate control based on physical valuations that it could hardly be induced to retrace its steps and to consign its new and expensive toy to the scrap heap. There is room, moreover, for serious doubt whether the Supreme Court, with its traditions in favor of engineering valuations, would uphold the constitutionality of a rule that made the established earnings the direct test of future earning power to the exclusion of any consideration of the capital investment. But even if it be assumed that present earning power cannot be taken directly as the measure of the initial fair return for the future, it by no means follows that this factor need be left completely out of account. For if the Supreme Court faces the alternatives of accepting the valuations fixed by the Interstate Commerce Commission and based in part on pre-war prices, or of rejecting these valuations in favor of a higher rate base in which current reproduction costs receive dominant consideration, then I think the choice should depend very largely on the question whether the lower or the higher valuations are necessary in order to support the earning power which the railways have already succeeded in establishing.

What, then, is the answer to this question of fact? It is impossible as yet to make a final answer, because the Interstate Commerce Commission has not yet brought its valuations down to date and has, therefore, not indicated at what figure it proposes to value the total railway property existing at the present time. But a rough estimate may be made by taking the tentative figure of $18,900,000,000 for Class I railways, which the Commission used in the 1920 rate case, called Ex Parte[14] 74 and by adding to that figure the subsequent net increases in book values minus the increases in depreciation reserves. Following this method, which was suggested to me by Dr. Lorenz, Director of the Bureau of Statistics of the Interstate Commerce Commission, one gets the figure of $21,240,000,000 as the valuation of Class I railway properties for December 31, 1925, and $21,750,000,000 for December 31,

[13] Railways Act, 1921, 11 & 12 Geo. 5, ch. 55, secs. 58 & 59.

[14] Increased rates, 1920, 58 I. C. C., 220.

1926. If we take the mid-point between these two figures as the average value for the year 1926, we find that the total net operating income for the same year yielded a return of 5.73 per cent on the valuation. For the year 1925, the corresponding rate of return was 5.49 per cent, while for the present year, 1927, it will be materially less than for either of the two previous periods. In view of the fact that the Commission has accepted a rate of 5¾ per cent as a reasonable rate of return under present conditions, the data just given would seem to indicate that Class I railways, taken as a group, have actually earned during the last three years somewhat less than the amount to which they would be entitled on the basis of such valuations, and of such interest rates, as the Commission seems disposed to accept.

Suppose, however, that a decision of the Supreme Court should compel the Commission to write up its valuations on the basis of spot reproduction costs, what would then be the relation between earnings already established and the standard return to which the railways would be entitled in the future? Here, again, we cannot make a definite answer, since no appraisals on the basis of reproduction costs have yet been published. But assuming that the acceptance of reproduction cost would require the Commission to write up its valuations to the extent of 40 per cent—and this is a more moderate estimate than is usually assumed—the effect of such a boost in values would be to give to the railway as a group the right to earn on their existing property 40 per cent, or almost half a billion dollars per year more than they have ever before earned in their history.

In view of these facts, I conclude that, taken as a group, the Interstate Commerce Commission's valuations of existing railway property will not do violence to the reasonable claims of existing security holders, and that, on the other hand, the valuations contended for by the carriers, which are based on post-war reproduction costs, go far beyond the point of protecting any such reasonable claims. Whether or not modifications of the Commission's valuations should be made with respect to individual carriers, whether, for example, the initial rate base should be increased for those railways whose present rate of earnings is unusually high, and decreased for those railways whose present rate of earnings is unusually low, is a question on which no opinion is ventured here. I am simply suggesting that if the alternative narrows itself in practice to a choice between the Commission's valuations, based on pre-war construction costs, and the carrier's valuations, based on post-war construction costs, then the former choice is the one that more accurately measures the just claims of present investors.

In making this choice between the two rival rate bases, one must never forget that a regard for the fair claims of property owners implies a

protection, not alone of railway investors, but also of railway users, against unduly sudden and unexpected changes in the rate structure. Shippers and consumers of transported commodities have just as much right to rely on the government and on the courts for protection against sudden and undue disturbances of the rates which they pay as have the railways to insist on protection against undue disturbances of the profits which they receive. And much as one may be disposed to err on the side of liberality with respect to the latter claims, one must never forget that this liberality can be secured only at the expense of other interests, such as the interests of farmer shippers, who as a class have been buffeted far more brutally by the winds of economic changes than have the owners of railway stocks and bonds. Just how serious a burden would be placed upon shippers and consumers by the adoption of the higher rate base demanded by the carriers is a question that no one can answer with confidence. The percentage by which the rate level would have to be raised, in order to yield a 5¾ per cent return on the higher valuation, depends largely on the extent of the adverse effect of the higher rates on the amount of traffic. Many authorities, including the Interstate Commerce Commission and also including spokesmen for the carriers themselves, have doubted whether any rates could be fixed that would yield the full return on present reproduction costs of the railway properties. The traffic, it is believed, would simply not bear the increase. Others are more optimistic as to the capacity of the country to bear the higher rates. But even these optimists would admit that a material increase in rate levels would be required, an increase estimated by counsel for the carriers at 6 to 8 per cent and by counsel for the Interstate Commerce Commission at 18 per cent, even disregarding the likelihood of a fall-off in the amount of traffic. It is, therefore, reasonably clear that so far as vested interests are concerned, so far as claims of investors, shippers, and consumers to a continuity of governmental policy are to be considered, it is the lower rather than the higher valuation which more nearly fulfills the requirements of fairness and which promises to result in the least jolt to our present economic system.

There are many, no doubt, who will take issue with this conclusion on the ground that I have approached the problem from the wrong point of view. According to these critics, higher valuations than those made by the Interstate Commerce Commission are needed, not primarily because of consideration of fairness to investors but rather because of the expediency of allowing higher returns in order to encourage the rapid development of the railroads. Rates should therefore be raised, and railway earnings increased, in the very interest of the shippers and consumers, to whom efficient railway service is more important than the maintenance of the present rate levels.

Whether or not the requirements of railway credit are such as to support in fact this particular argument for a general increase in railway earnings is a question on which I have no adequate grounds for an opinion. One point, however, seems obvious—that if an increase of railway income is deemed desirable for the purpose of attracting capital, this increase should be allowed for, not by an expansion of the valuations approved by the Interstate Commerce Commission, but rather by an increase in the rate of return which the Commission has accepted as reasonable. At first thought this choice between a higher rate base and a higher rate of return may seem a matter of complete indifference. But reflection will bear out that it is a matter of great importance. For if the more liberal return that we assume to be desirable is given in the form of a higher rate base, without any change in the 5¾ per cent rate of return, then the reward offered for *new* capital remains unchanged, at 5¾ per cent; but, on the other hand, if the greater liberality takes the form of an increase in the rate of return, say to 6 or 6¼ per cent, while the rate base remains unchanged, then the full inducement of the higher interest rate will apply to the new capital. I conclude, therefore, that if anyone approaches the problem of railway valuation simply and solely with reference to the object of attracting capital, if anyone feels that all other considerations are of minor importance beside the consideration of encouraging our railways to expand and improve their service, such a person is the very one who should insist most strongly on a moderate rate base as applied to existing property, so as to leave the way open for the offer of a more liberal rate of return as applied to new capital. To attempt both things at once—to give to the railways a rate base measured by post-war construction costs and also to allow them a rate of return on that high base in excess of the rate now in force—would simply break the back of the shipper, who would not and could not bear the very great increase in charges that these two simultaneous changes would require.

6. *Conclusion.*—In bringing to a close this discussion of the valuation problem, the point that I would most stress is the folly of attempting to regulate the prices of public monopolies so that they will conform to the prices that are assumed to prevail under conditions of free competition. Overlooking the fact that the proposed imitation of competition is a very poor one, overlooking the fact that a governmental control of rates designed to yield a stated return on reproduction costs is not even a good caricature of the automatic control of prices that takes place in a dynamic competitive market, we must still recognize that the attempt to carry over into the field of the large-scale monopoly the same price system that is assumed to prevail in the field of the small competitive enterprise, is bound to result in a serious misfit. One

reason why it is a misfit is that the competitive price system disregards so ruthlessly the financial needs of the individual producer. To the low-cost producer it yields profits far beyond the current rate of interest on invested capital; to the high-cost producer it brings deficits that spell bankruptcy and ruin. As long as competition is full and free this process, harsh though it be to the unfortunate producer, may serve very well the interests of the consumer. For what matters it to him that any one producer is crippled so long as he can turn to a more fortunate rival for his necessary services and commodities? Not so under monopoly. Not so with a railway that is alone in serving a community. For let that railway come to grief, let its credit be injured and its stock-issuing power destroyed, and its customers will be helpless to escape the deficient service by resort to a successful rival. Why, ask the defenders of reproduction cost, should railway security holders be given any greater insurance against the fluctuations of price levels than is given to the holders of securities in an unregulated enterprise? The answer is that when the investors in small competitive enterprises fall, they may fall alone, but when the holders of railway securities fall, they force the whole community to become unwilling mourners of their downfall.

What system of rate control can most wisely be substituted for the competitive price system is a question that no one can answer now with confidence. The prudent investment basis is suggested here, not because it is assumed to be the ultimate basis but simply because it seems to be a more promising experiment than any other plan which has yet been presented. Very possibly a new and better system will be developed in the future. But when it comes, its merit will lie, not in a more faithful imitation of the process of small scale competition but rather in a more skillful adaptation to the requirements of large-scale monopoly. The imitative process will then be recognized as belonging to the infancy of regulation, to the period such as railroads went through when steam roads were operated on the principle of turnpikes, when passenger cars were made to look like stagecoaches, and more recently when the interiors of steel Pullmans were decorated so as to imitate the grain of South American mahogany.

I. L. Sharfman.—It is essential, in every discussion of railroad valuation, that the nature of the "value" sought to be ascertained shall be clearly understood. Since this "value" is primarily determined for use in the processes of rate regulation, it is obviously something different from the market value which economists generally contemplate. Market value, in the case of a complex income-producing good like a railroad, rests dominantly upon earning capacity, which in turn is largely dependent upon the level of the rates charged. The reasonableness of these rates, then, clearly cannot be tested by reference to property values which are themselves the resultant of the very rates whose propriety is in issue. The vicious circle involved in such a procedure is now commonly recognized, and few contend for its outright adoption. Nonetheless, the market value fallacy constantly creeps into valuation discussions, particularly in connection with demands for the recognition of intangibles, and President Hadley has rendered an important service in emphasizing once more that those engaged in the so-called physical valuation of railroads are not seeking value in the traditional sense, as determined by market forces. The end in view is the ascertainment of a rate base—the finding of a figure upon which the accepted percentage of return may equitably be computed, as a guide for the regulation of rate levels and the limitation of profits. The undoubted confusion which has enshrouded valuation proceedings arose originally because of the judicial use of the term "fair value" in these circumstances; and the confusion has been continued through the statutory adoption of the same phraseology. In recent years, therefore, the term "fair value" has been generally qualified by the phrase "for rate-making purposes" or displaced by the more accurate "rate base."

Because the figure thus sought is the result of authoritative determination rather than of spontaneous emergence in the market, President Hadley insists that "assessment" rather than "valuation" is properly descriptive of the process. There need be no quarrel with regard to the suggested terminology. It does not follow, however, that impropriety in the use of words must lead to condemnation of the substance underlying these words. The Interstate Commerce Commission may be making "assessments" and not "valuations" in their true significance, but that does not necessarily mean that its activity in this direction is wrong in principle and dangerous in practice. If valuations, in the sense of merely recording market values, do not constitute a proper rate base, then there is no need of making such valuations; and if "physical valuations," though in essence but constituting "assessments," do provide a proper rate base, then they should not be vitiated by the sole fact that they are misnamed. While President Hadley's paper purports to confine itself to a discussion of the meaning of valuation, its conclusions, by way of digression, constitute by far its most significant pronouncements. He contends that physical valuation, on the basis either of historical cost or of duplication cost, is in its very nature undesirable as well as meaningless, because it serves as an instrument for limiting profits

and thereby imposes restrictions upon property rights. The thrust of the attack, then, is upon the policy of regulating rate levels at all, rather than upon alternative methods of determining the rate base for exercising such regulation. Any limitation of profits is deemed to retard railroad development, to constitute a taking of property without due process of law, to subvert the genius of our institutions. The argument recalls the contentions of more than half a century ago when the state's right to regulate the railroads first came to issue in the granger cases. In the interim both the validity and the wisdom of the general policy of regulating railroad rates—absolutely as well as relatively—have been amply established. It is doubtful whether even the carriers would welcome a relinquishment of government control in this direction. Legislative enactments and administrative orders have at times been unduly restrictive. The dark picture of the railroad industry painted by President Hadley reflects more accurately the conditions of a decade and a half ago than those of today. But controversy has long narrowed itself to the desirability of particular methods of control. The necessity for profit limitation in the railroad field was recognized from the beginning and has been cumulatively confirmed by subsequent experience. And the need for physical valuations, which provide the only objective standard for testing the reasonableness of the rate level, sprang from practical administrative and judicial contacts with this regulative process. Once the policy of rate regulation is accepted, the fact that determinations as to the rate base are authoritative "assessments" rather than market "valuations" is entirely immaterial. It is but necessary that they be equitable "assessments"; indeed, if they were to be turned into "valuations"—establishing estimates of the market value of railroad properties on the basis of value of service and the earning capacity resulting therefrom—they would defeat the very purpose for which they are made.

A rate base being necessary, what are the equities of the situation as between contending principles for its determination? With the chief issue of the O'Fallon Case as a starting point, Professor Bonbright has considered the relative merits of prudent investment and reproduction costs as the two alternative standards of valuation around which controversy primarily centers. Without glossing over the difficulties which inhere in accepting either standard as the controlling determinant of the rate base, particularly in the absence of any explicit enunciation of legislative policy, he has found the principle of actual cost to possess distinctly superior merit on both theoretical and practical grounds. In my judgment his contentions have been presented with admirable restraint and his conclusions are sound and convincing. Valuations based on actual cost assure the certainty and stability that are essential to economical and effective administration of rate control, and by eliminating speculative fluctuations that spring from changes in the general price level they provide a sounder structure than those based on reproduction cost for the attraction of capital to the industry on most favorable terms. The reasonable claims of both the carriers and the public are amply safeguarded, and opportunity still remains for stimulating efficiency, for recognizing changes in the purchasing power of the

dollar, and for stabilizing competitive situations, through adjustments in the rate of return. There is no need of further elaborating the argument of Professor Bonbright; and such weaknesses as it may be alleged to possess will doubtless receive critical attention from Professor Brown, who, among economists, is perhaps the leading proponent of the cost of reproduction theory. One point, however, cannot receive too frequent emphasis. The basic economic warrant for support of the cost of reproduction standard is found in the principles of competitive price determination. It is urged that the public must pay and the companies may properly demand a return on such capital costs as would have to be incurred by a new entrant into the field. Such a result, the contention runs, is automatically reached in competitive industry, and this result should be approximated in the railroad field through the regulative process. This reasoning, in the first place, would lead to the acceptance, as a rate base, of the cost of replacing the service rather than the cost of reproducing the identical plant. The difficulties involved in ascertaining such a replacement cost are well-nigh insurmountable. The outcome would be so highly speculative as to lose all practical utility. In the second place, it assumes the desirability of affording opportunities for differential competitive gains, through automatic appreciation of the rate base, in an industry which is largely monopolistic in fact, and in which there is increasing public protection against competitive pressure. There are doubtless possibilities that economic maladjustment may arise in isolated situations because of neglect of purely competitive forces; but these possibilities are largely negligible when we view the transportation system as a whole, in its present extensive and reasonably stabilized condition. Moreover, the prevailing system of regulation, taken in its entirety, clearly evinces the assumption of an affirmative public responsibility toward the carriers, and this responsibility involves at least a corresponding public duty towards the users of the service. Railroad regulation does not seek solely to duplicate the results which normally characterize competitive industry. There are also conscious public ends. One of these ends is to safeguard the industry against domination by the lure of speculative profits, with its demoralizing shifts from flagrant exploitation of the public and resulting overextension of facilities to unconscionable restriction of the income of investors and consequent impairment of plant and equipment. An approach to this positive goal of minimizing risk and uncertainty in the railroad field necessitates reasonable assurance of an adequate return upon prudent investment. Profits and losses are alike reduced. The rights of the parties are definitely determinable, whether in periods of rising prices or in periods of falling prices. Actual rather than hypothetical capital costs are controlling. The realities of each situation govern.

In dealing with the problem of railroad valuation, even economists can no longer confine themselves to academic theorizing. For almost fifteen years the Interstate Commerce Commission has been pursuing its laborious and costly task of ascertaining the value of American railroads for rate-making purposes. This task is now approaching completion. The rule of rate-making and the recapture clause of the Transportation Act have im-

posed upon the Commission the duty of making specific uses of its results. The O'Fallon Case has brought to issue the legal validity of some of the outstanding principles and practices it has employed. The general wisdom and expediency of the Commission's work in this sphere is in the balance, therefore, particularly in its bearing upon the maintenance of a sound policy of rate regulation. Professor Bonbright, following the procedure elaborately emphasized by Dr. John Bauer, has distinguished between the principles that should govern the establishment of an equitable rate base for the future and those applicable to the valuation of existing properties. There can be no question that a standard of *ex post facto* regulation denying the reasonable expectations of existing investors might with reason be deemed to be unsound in policy as well as invalid in law. The important end, perhaps, is to set up a proper basis for the future—equitable in substance and effective in administration—whatever disposition may be made of pending valuation proceedings. It must be kept in mind, however, that the Commission is authorized to make no such clear-cut separation between the past and the future. Its task is to value existing railroad properties and to keep the valuations up-to-date. There has been no legislative enunciation of policy either for the valuation of existing properties or for the measurement of subsequent additions. Accordingly, in exercising its powers, the Commission has made no basic distinction of principle between the past and the future. But while it has sought to approximate actual investment (including reinvestment of surplus earnings), it has adhered to no single standard. Because of lack of reliable accounting records, for example, its primary valuations of physical structures are based upon cost of reproduction at 1914 unit prices. In the judgment of the Commission the results are probably somewhat in excess of actual investment. Railroad lands, furthermore, are included at the market value of adjacent lands. Capital commitments under the rising price level since 1914 are accorded recognition as made. With a full knowledge of the railroad industry at its command, after a consideration of all relevant facts, and without arbitrary elimination of any element of value recognized by law, the Commission is announcing its informed judgment as to the single-sum values of the various railroad properties for purposes of rate-making. The most convincing justification of its results is stated in practical terms. While investors have not been expressly restricted by law to a return on actual investment, neither have they been assured a return on current reproduction costs. The important fact is that their profits have been definitely subject to limitation from the beginning, and that the adoption of actual cost as the measure of the rate base does not restrict revenues below their customary returns or their reasonable expectations. Indeed, on this basis, as tentatively used by the Commission since 1920, general satisfaction as to the rate level on part of the roads has ensued, and the credit of the carriers has markedly improved. On the basis of current reproduction costs, on the other hand, fluctuations in the rate base amounting to billions of dollars would follow from year to year, and such extensive rate increases would be necessary to support the new rate base as would probably exceed

the ability of the traffic to bear. In the graphic phrase of Professor Bonbright, the valuation of existing properties on the cost of reproduction principle would create "such a high ceiling that few railroads would [will] bump their heads against it in practice." In other words, the processes of rate regulation, from the standpoint of the general level of charges, would be rendered practically nugatory. The Commission has approached the valuation project as an integral part of its regulative power. In view of the absence of legislative guidance and the confused and inconclusive state of judicial determinations in this field, it has been performing its tasks in very statesmanlike fashion.

These practical considerations should carry weight with the courts. Economists, unlike lawyers, are not unduly swayed by the argument from authority. Professor Bonbright's discussion is rightly grounded in fundamental economic considerations. As a practical matter, however, the question of legal precedents cannot be entirely disregarded. The dissenting commissioners in the O'Fallon Case were largely influenced by the conviction that the Commission was running counter to the law of the land as established by the Supreme Court. But it is submitted that even on the basis of authority the situation is by no means foreclosed. It would carry us far afield to attempt to classify and interpret the various Supreme Court decisions on "fair value." It is doubtless true that they show a tendency to accord controlling consideration to current reproduction costs. But none of the Commission's determinations under the Valuation Act has as yet been reviewed, and there is little evidence that the judicial doctrines of valuation have been crystallized into fixed rules of law. The very fact that the Supreme Court has expressly postponed a consideration of the merits of the Commission's principles and processes until the valuations are actually used, would seem to indicate that the Court is hospitable to the view that the practical significance of the results is of prime importance. The Commission and the Court are in complete agreement that the ascertainment of "fair value" is not a matter of rule or formula, but must be based upon the exercise of reasonable judgment, in the light of all relevant facts. The Commission's valuations are the outcome of such informed judgment. In numerous connections the Court has recognized the Commission's exercise of discretion, if neither arbitrary nor contrary to law, as binding and final, and has declined to substitute its judgment for that of the expert tribunal, informed by experience, to which the tasks of regulation are primarily committed. The Court's powers in valuation proceedings are invoked chiefly as a means of preventing confiscation. What constitutes confiscation in law has always been a rather flexible matter. In this instance, however, the Court is assisted by the detailed findings of a continuously functioning administrative tribunal whose sweep of authority embraces practically the entire railroad business of the country in all its important aspects. The Commission's analysis, based on an intimate acquaintance with the investments and earnings of the carriers, past and present, and with their improving credit condition, clearly discloses that no confiscation would in fact flow from its findings. Moreover, the valuations are being

attacked, not only because of the 1914 unit prices used, but on numerous other grounds. The protests embrace dozens of counts. The treatment of depreciation, appreciation, and going concern value are among the more important controversial issues. If each of these matters and the relative weights to be accorded to them are to be viewed as distinct questions of law for judicial determination, then the conception of "fair value" as a matter of practical judgment will be largely relinquished, and the doctrine of confiscation will serve as a means of transferring ultimate control of rates from the Commission to the courts.

Harry Gunnison Brown.—Professor Bonbright has presented his case so effectively that I fear you will have small patience with my attempt to refute it. Yet I believe him to be wrong.

In taking returns in competitive industry as a standard to which returns in regulated monopolistic industries should be made to conform, I am distinctly not setting up the price system as a paragon of excellence, as a perfect instrument for the attainment of all social ends. It is, however, a working device for attaining some of these ends, such as the application of labor to producing those goods which the public desires and is willing to pay for. It is presumably preferable to the compulsory proportioning of labor into different lines. But, whether it is or not, the attempt to depart from it as a standard, in regulating public service industries, while maintaining its control over industry in general, is bound to result in economic waste and loss.

In competitive business, current cost of plant construction is far more significant as a determinant of price of product, than is historical cost or "prudent investment." However much it may have cost me, say in 1920, to construct a plant for the manufacture of a competitive product, the fact that competitors can construct such a plant now at a lower cost compels me to accept a lower price. And, *vice versa*, if cost of plant construction has risen, this fact, by influencing new competition, influences my price as well. To apply this standard in the regulation of public service industry rates is to apply an objective standard, taken from the operation of the open market. Not to apply it is to cause economic waste, and in some circumstances very large waste.

To make the point clear, let us first suppose present cost of plant construction to be higher than past cost. What consequence, then, from fixing rates to yield a fair return on past cost? Such rates, in the case of (say) a railroad, would tend to increase traffic. But they would not justify new construction. If congestion resulted, then holding down the rates by law would mean preference of some freight as against other by some purely arbitary arrangement, so that traffic well able to pay high rates, because important to the community, would be refused for the sake of less important traffic.

If the community grows and the amount of really important traffic increases, shall we permit a new railroad—or a new track on one of several railroads—to be constructed in order that this increased traffic may be

handled, allowing the company which has constructed the new or additional plant to charge rates based on current construction cost while compelling the roads constructed long ago to base their rates on past cost? Then some shippers will pay low rates and others will pay high rates.

Again, suppose two cities which have been provided with plants for the supply of gas, water, telephone, electric light, power, and street transportation, at two different dates. The city provided with these plants at the later date, when costs of construction were higher, may be severely handicapped, relatively, by basing the rates it must pay on these higher construction costs, and industry may so be discouraged from locating where, all things considered, the advantages are the greater. Economic waste would thus be promoted and productive efficiency lessened. Similar results will ensue if two sections of the country have railroads constructed at two different dates and so at different costs and if rates are based on these different historical costs.

Let us now consider what Professor Bonbright refers to as the fatal flaw in my argument. His objection is stated as applicable to two situations. The first is that of a railroad which constructs a new track. The additional cost per ton of carrying goods is not then necessarily, he points out, or even usually, the same as the former average cost. This is true. Until the new track is fairly well utilized, the additional cost per ton of the traffic for which the new track was laid will be greater, and when this track is fully utilized the additional cost may be less—since a two-track road can probably do more than twice the work of a one-track road. Yet looking at this matter pragmatically and recognizing that precision is not always possible in human affairs, it seems to me that regulation which insists that rates shall be fixed no higher than is necessary to earn a reasonable return on current cost of plant construction and which permits them to be as high as needed for that purpose, is a proper and desirable regulation.

The second situation mentioned by Professor Bonbright in this connection is that of a railroad only partially utilized. In this case the additional or marginal cost of new traffic includes nothing for overhead. Bonbright here argues that, since the plant is already here, any traffic which covers the bare cost of moving is socially worth taking, and says the ideal rates would merely equal these additional costs, and that if current construction costs are higher than prudent investment, then rates based on the latter will come nearer this ideal than rates based on the former. Here, also, we need a pragmatic outlook. The policy of forcing rates down to mere costs of operating, if generally adopted in such cases without a government subsidy, would tend to compel higher rates in cases of full utilization, to make the risks of construction seem worth while, and would so tend to retard, somewhere, economic development. If done by government subsidy, the door would be open to favoritism and abuse. But, in any case, no such policy is practically desirable in the long run. Whatever may be said for making rates low to encourage utilization of a plant already built, growth of population and business may finally raise the question of construction of new or additional facilities. Yet this construction should not follow, so

diverting capital from other lines, unless the needs of the community are such that a reasonable return can be paid on current cost. How test, in the long run, the desirability of such construction, other than by charging rates high enough to yield a return thereon and so judging whether there would be enough business at those rates to justify the construction? If it be argued that a plant once built should be used even if rates must be as low as operating costs, it can be argued with no less cogency that the plant should not be built—or have been built—unless the rates it can charge are likely to make the building worth while. As a long-run public policy, therefore, it seems to me that a return ought to be allowed, if it can be secured. This does not mean that special business (e.g., night messages or certain classes of traffic) may not properly be taken at rates little more than enough to cover bare additional cost. It does mean that undesirable turning of industry from one locality to another, or other economic wastes, are likely to be caused by a policy which does not allow—if the customers can be made to pay it—a fair return on current cost of construction.

I think perhaps the argument for current cost can be made clearer by reference to the case where present cost is lower than historical cost of construction. In this case, to insist on rates based on historical cost is to make higher rates than are necessary to pay returns on contemporary cost. It is to discourage traffic—or use of electric power, etc.—which is worth while and able to pay full contemporary cost. In the case of transportation, such rates act like protective tariffs in preventing a worth-while geographical division of labor.

Again, a policy of basing rates on historical cost, when contemporary cost is lower, penalizes the older communities which have already been provided with public utility plants. The new community which can construct plants at low cost can have low rates but the old community must pay higher rates, just because it has plants already constructed, than if it could start over. So industry must tend to go to the newer places even if they are in other respects less well adapted to production purposes. The tendency would be to wither and dry up the longer-established towns and cities.

Even if the facilities of the public utilities in these older towns or sections were but partially utilized so that the marginal cost of service was merely the operating cost, rates would be kept up to yield returns on the high construction cost of a previous period. For, though reducing the rate would perhaps increase the business, no reduction would be made voluntarily unless it was expected to increase the business more than in proportion. Thus, to halve the rates of a railroad, even though it might double traffic and even though such traffic would then be paying a full return on contemporary cost, would not be thought worth while because, with the same total income (one-half rate times doubled traffic) and greater expense for moving the larger traffic, returns would be reduced.

So, whether current plant construction cost be higher or lower than historical cost, to follow the latter rather than the former as a basis of valuation for rate-making, is likely to result in significant economic waste.

Now a few words as to unearned increment. The socially produced rental

value of land ought, I believe, to be mainly taken by society. An income not due to individual activity can be taken by society without decreasing that activity. We should, by successive steps, seek to attain that goal. But it should be attained by taxation rather than by rate regulation. To attempt attaining it by rate regulation works in the direction of diverting industry from its normal lines. To say to people that they may not have an unearned increment but that it shall be taken by taxation in any event, will not cause them to refrain from production. To tell them that they may have it if they use their land for all other purposes but may not have it if they use their land for railroads or other public utilities is to encourage the one set of uses and to discourage the other set. Professor Bonbright seems to recognize this for he plans a return which would be high enough to offset the loss of the chance at an increment of value and protect, more or less, against a decrement. But this would compel a declining community with falling land values to pay rates based on its former high land values, just when it could least afford to do so.

And so with rising and falling prices. It seems to me unreasonable to assume, as Professor Sharfman seems to do, that we cannot, when prices are rising, raise rates in substantially due proportion because of supposed unfairness to the public—or, equally, because the traffic will not bear the higher rates. When prices in general have doubled, a doubled rate for transportation or light or power is really no increased burden at all. And if the general public makes a bargain to avoid such an increase—which it can well bear—at the cost of allowing rates not to fall in proportion when prices in general, including construction costs, greatly fall and when rates must be paid in dollars of higher value which it is harder to get, the public will be making a very bad bargain indeed.

Then how about the financial stability argument? True, public utility companies are considerably financed by bonds and preferred stock. True, a long period of falling prices with proportionately falling rates, would especially injure common stockholders and might bring bankruptcies. But manufacturing companies, hotels, office buildings, etc., are also largely financed by bonds. And many home owners and farm owners are heavily burdened by mortgages. These, too, suffer from falling prices. If public utility rates are kept up in such a period, the relative decrease of money or credit is likely to bring it about that other prices fall in an even greater degree. Thus, in protecting the public utility stockholder, we make the situation even worse for countless farmers and other debtors than it would otherwise be. And the evils to the general public of bankrupting public utility companies may be exaggerated. People do manage to ride on bankrupt railroads, and financial reorganizations are not utterly unknown! If to be financed so largely by bonds or preferred stock is to protect public utility companies against rate falls when all others are getting lower prices, these companies are likely, so soon as prices show signs of dropping, to substitute preferred stock and bonds for even more of their common stock! The remedy needed here is price stabilization, not protection of the utilities against rate reduction when all other prices are falling and when the lower

rate would yield a good rate of return on what it would then cost to construct the necessary plant.

Now the problem of obsolescence. In a competitive industry, a new and cheaper mechanism for rendering the service does not greatly affect price of product until widely adopted. In a public service industry, cost of duplication, as judged, perhaps, from cost records corrected by an index of construction cost changes, can be taken as prima facie evidence of present cost of construction of the plant capable of rendering the desired service. But when and if it becomes generally recognized among engineers that a new type of plant which is cheaper, will serve the same purpose, the old being obsolete, then to insist that the public go on paying on the old basis—as to so insist when prices have greatly fallen—is to impose on the public a rule of the "dead hand."

I do not share the views of those economists who praise the recapture section of the Transportation Act of 1920. Time is lacking for a full discussion. I will allude to one aspect of the problem. Suppose we take the case of a direct and a roundabout railroad between two important cities. The direct road can, at any rate by the construction of additional trackage, take all the traffic. The roundabout road follows a winding route to serve intermediate points on that route. Possibly these intermediate points do not furnish traffic enough to justify it and it is not prosperous. Under the act of 1920—and this policy was foreshadowed by certain prior decisions of the Interstate Commerce Commission—we go on the supposition that rates must be kept up on the direct line so as to yield a return on the roundabout or "weak" line and so as to yield a surplus return on the direct or "strong" line, from which half of all over 6 per cent is to be paid into a special fund administered by the Commission. So to keep up rates on the direct line in order that the roundabout line should be profitable or in order that it may serve, at lower rates than it otherwise would, its intermediate points, is to subsidize it or them at the expense of the two terminal cities on the direct line, and the subsidy is paid, not by the general public but by the traffic of these terminal cities. These two cities should have rates as low as will yield a fair and reasonable return on the direct line between them. Higher rates act like a protective tariff in preventing trade between them which is entirely able to pay its cost and trade which is, therefore, entirely worth while. Part of the trade is thus prevented by an arrangement like a tariff. Part of the rest contributes a bounty for the intermediate towns on the roundabout line. Cities which should, for the best economic results, grow and develop are retarded. Others are favored and developed beyond what their location and other advantages warrant.

What are professional economists thinking of! We pretend to object to protective tariffs as uneconomical interferences with trade. Shall we simultaneously favor a system of valuing railroads according to historical cost and basing rates on such values when such valuation is likely, often, to produce exactly the same economic consequences? We pretend to object to such proposals as that in the McNary-Haugen bill on the ground that they are uneconomical interferences with the normal development of industry

and trade. Shall we at the same time favor an original or historical cost basis of valuation, when the application of such valuation to different utilities and railroads built in different communities at different dates, would uneconomically build up some communities and wither the development of others? We claim to be opposed on broad grounds of economic principle to both tariffs and subsidies. Shall we, almost in the same breath with which we voice such opposition, applaud a transportation act which is based on the principle of keeping up transportation rates between certain points, so decreasing trade between them, and of forcing these points to subsidize service to other points?

If the principles we profess to support have really so little significance for most practical problems, why not quit professing and teaching them?

INTEREST RATES AS FACTORS IN THE BUSINESS CYCLE

By W. F. Mitchell

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1. *Statement of the problem.* In most discussions of interest in relation to cycles, the problem has been viewed from the two standpoints of bank reserves and of the price level. The bank reserves have been cited as measuring the supply of available funds and the price level has been viewed as affecting and causing a demand for funds, which in turn affects bank reserves.

This method of attack is sound and useful, and I would not minimize the understanding we may obtain of interest by taking those viewpoints. In an analysis of interest rates as factors in the business cycle, I propose to emphasize a phase of interest hitherto not sufficiently emphasized; namely, the risk element in loans as a cost of supplying funds. I hope to point out certain material interrelations between risk, cost, prices, and interest rates, showing especially that interest fluctuations in the cycle are important as causative factors in the cycle.

2. *Cyclical trend of interest rates.* While there are many interest rates, a useful purpose can be served by finding an average interest rate. Probably as good a method as any for finding an average rate is to divide the interest income of banks by the earning assets of banks. This would give the rate of earnings on money loaned by banks, including investments.

Interest income received by national banks has been reported by the comptroller since 1918. Data on gross income of banks, over 90 per cent of which is interest income, are available since 1888. The trends of the ratio of total gross income and interest income, being nearly identical, show very similar trends since 1918. So the ratio of total gross income of national banks to total earning assets,[1] I believe shows rather accurately the trend of average rate of earnings of banks since 1888. Unfortunately, for the analysis of cycles, the data are never given oftener than twice, and in recent years, are given only once a year. The interest or earnings reported in June relate to the fiscal year. What does the rate of earnings on earning assets show, first, with respect to the correlation with business trends, and secondly, with respect to the importance or amount of cyclical fluctuation in such rate of earnings?

As is well known, interest rates lag and follow the trend of trade by about six months. So does the ratio of earnings to earning assets follow the trend of trade. The data, being given only by years, may

[1] Including overdrafts and customers' liability on account of acceptances.

not show very precisely the high and low points, but do show definite cyclical trends that may be correlated rather closely with other interest rates, and with the trend of trade, if we allow for the lag of interest. The conclusion is reached, therefore, that the average rate of earnings which national banks receive shows cyclical fluctuations.

Are these cyclical fluctuations of sufficient amount or moment as to be important as causative factors in the cycle? For the United States as a whole, during the period, 1918-1926, the rate of earnings on earning assets, including rediscounts, was 21 per cent higher in the highest year than in the lowest year. If one had monthly figures so as to show more precisely the highest point and the lowest point, no doubt, the percentage of range would be much larger than 21 per cent. Furthermore, the rate is based upon earning assets, which include bonds, on which the range of fluctuation is much less than on loans and discounts. A large proportion of the earning assets had a range of interest rates much larger, no doubt, than the average rate range.

If one takes specific regions, such as New York City or the country banks of Minnesota, the highest rate in any year, 1918-1926, was over 50 per cent higher than the lowest rate of the period. In Massachusetts and Montana the high of this period was over 30 per cent above the lowest rate. These are based upon yearly figures, and thus greatly minimize the actual range of rates. Furthermore, they are the average of all kinds of earning assets, and do not show the fluctuation in the most risky of the rates. But these average rates do show that the cyclical range of interest rates is important if measured in terms of range of fluctuation in the average rates.

The variation in rates in the years from 1918 to 1926 are not exceptional except that they are somewhat larger in range in this period than in other periods. The period from 1888-1894 also showed great range of fluctuation in interest rates, the range at Cleveland being 29 per cent and at Chicago 23 per cent. The normal situation in interest rates is a continuous cyclical fluctuation in the rate of earnings, and this fluctuation shows a goodly per cent of range.[2]

These fluctuations in the rate of earnings being cyclical and unpredictable, involve losses for borrowers and lenders. The uncertainty of the change, like any uncertainty, is costly, and may be included in the cost charged by the banker. Since these changes cannot be forecast and planned for with precision, they add to the difficulty of conducting enterprise. The real importance is made the more apparent when the amount of the increase or the decrease in interest cost, due to changes in interest rates, is compared with other accounts such as taxes, profits, and salaries paid by business enterprises.

[2] *American Economic Review*, XVI, 211.

3. *Importance of interest as a cost.*[3] Whether or not interest as a cost has material consequences in the cycle depends upon two factors. First, is interest cost large in comparison with other expenditures and thus a major consideration in the determination of business policies? Secondly, are there important cyclical fluctuations in the rate of interest in the major fields of finance or economic endeavor, especially in those fields that have to bear the heavier interest costs? If the cost of interest were a negligible factor, its price or rate would be negligible and, therefore, the fluctuation in the rate of interest also would be an unimportant factor.

In measuring the importance of interest as a cost, several kinds of data are available as standards of measurement. I shall now proceed to state the necessary data and analyze them.

If we compare interest cost with the taxes paid we note, according to Maurice Leven's[4] analysis, that taking the United States as a whole, the interest which agriculturalists paid to banks and merchants (who were also borrowing from banks) averaged for the three years 1919-1921 about three times all the taxes the farmers paid. In some states as in Minnesota and Missouri, their interest was six and seven times the taxes paid. In Vermont in 1919 the interest cost was thirteen times the cost of taxes. This interest paid to banks and merchants does not include the interest on mortgages held by individuals; so the total interest cost of the agriculturalists is even larger in proportion to taxes than I have indicated.

In a state, such as Iowa, where in 1919 the interest cost was five times the cost of taxes, a rise of 20 per cent in the rate of interest would be equivalent to doubling the taxes paid by the agriculturalists. Doubling the taxes in Iowa, I am sure all will agree, would not be an inconsequential matter. Yet the rise of interest rates from 5 per cent to 6 per cent would, in effect, place as large a burden on the agriculturalists as would doubling the taxes.

Interest cost paid by farmers may be measured in terms of the total expense which they incur. In this same period, interest was about 5 to 6 per cent of the total expense or cost of farming, which cost includes seed, feed, implements, stock, salaries, wages, etc.

Any increase in interest cost, other things equal, due to an increase in interest rates may well affect the purchasing power of the farming classes, just as an increase in taxes in any given year might cut down the expenditures for other things. A cutting down of the net income through higher interest cost, thus affecting the farmer's pur-

[3] I have been assisted in the statistical work of this investigation by Professor Dean Long, and by one of my students, Mr. Poynter McEvoy.

[4] *Income in the Various States*, p. 192ff.

chasing power, might well result in changed demand for certain types of goods.

The importance of interest as a cost paid by industrial corporations may be noted from the amount of notes payable outstanding. A study of 192 industrials taken as a sample from every tenth page of Moody's *Manual of Industrials* for 1925 shows that 171 had notes payable, which mounted to about 10 per cent of the total capital or assets of such firms. In other words, the banks, on account of notes payable, are providing industrials with about 10 per cent of their total assets, if we exclude the very few firms with assets of over $100,000,000. This study shows that for 1923 the larger firms secured a smaller proportion of their assets from banks than did the smaller firms. While the firms with twenty to one hundred million of assets procured 11.3 per cent of their assets from banks, those with assets from one half to two millions obtained 13.2 per cent of their assets from this source. The data for 1924 show even a greater tendency for the smaller concerns to secure their funds from banks, the smallest class receiving 14.2 per cent from banks. Since Moody includes only concerns of about one-half million assets and above, and since this study shows that the smaller concerns borrow more freely from the banks than do the large ones, probably a study of the small enterprises not included in Moody would show even larger borrowings from banks.

In 1919, the interest paid by manufacturing concerns amounted to 13.7 per cent of net profits, while the interest paid by construction companies was 25 per cent of net profits.[5] In mining and quarrying, it was 45 per cent. The general average for all manufacturing concerns shows that in 1919 the interest cost was .9 per cent of sales, and in many types of manufacturing it was much greater than this. The interest cost of trading concerns in 1919 was 1 per cent of sales.[6]

If we measure the interest cost in terms of the compensation of officers of corporations, we note that for mining and quarrying concerns, of salaries it was 159 per cent, for manufacturing concerns it was 57 per cent of salaries, 31 per cent for construction, and 42 per cent for trading concerns.

Interest cost may seem small and inconsequential if one compares it with the total gross income or total operating expense. Its real importance is best seen when one compares it with profit. The capital of business enterprises is provided by both owners and creditors. In our modern organization, the line of demarkation between ownership and creditorship is legally drawn, but economically it is not sharply drawn. Virtually, owners and creditors are partners in the business,

[5] Lincoln, E. E., *Problems in Business Finance*, p. 519.
[6] *Ibid*, also Converse, *Marketing Methods and Policies*, p. 350.

the owners being compensated as capitalists by the payment of dividends and surplus profits, while the creditors receive interest. The net income is thus divided between two claimants in equity. That which the creditor receives is a definite amount, and receives priority. Any fluctuation in the net income has a greater effect on the net profit than on the interest. Any fluctuation in the share of interest due to fluctuation in interest rates also will affect the amount going to the owner in the form of profit.[7]

The Harvard Bureau of Economic Research figures on interest and profits of wholesalers and retailers covering a number of years show cyclical change in the ratio of interest to profits. While included in interest is the interest on the owner's capital, the change in the ratio of interest (thus defined) to profits shows that in 1921 in wholesale and retail establishments, there was a deficit amounting in the case of retailers to 6.7 per cent of sales, and in the case of wholesale grocers to 1.9 per cent of sales. In 1920, the ratio was very high, showing that the profit was slight. When a deficit occurs, as in 1921, and interest rates are high, evidently the owner is not even receiving market rate of interest on his own capital, to say nothing of profit, the rate of interest being one of the main factors in the problem. Thus, when interest cost is compared with profits, it seems a significant factor.[8]

If then we measure the importance of interest in terms of taxes, in terms of profits, in terms of salaries paid by corporations, or in terms of the degree of the fluctuation in interest rates, we note that it is not an unimportant item. It is large enough in amount to be a major factor in the determination of business policies, and the range of its fluctuation is sufficient to make the determination of business policies difficult, and it makes the payment of the higher rates much more burdensome than the payment of lower rates.

4. *The risk factor in interest rates.*[9] In any analysis of the business cycle from the standpoint of interest, it is necessary to note that there are innumerable interest rates, and not just one interest rate. While it may be useful for some purposes to attempt to isolate the pure interest rate, such as the rate on bank acceptances or the rate on Government securities, this rate is applicable only to a small proportion of

[7] David Friday found that in 1913 the interest paid by mining manufacturing, railway, and public utility corporations amounted to 233 per cent of the taxes paid, 48 per cent of dividends paid, 38 per cent of profits earned, and 14 per cent of wages paid. In the period 1916-1919 interest was 39 per cent of dividends and 21 per cent of profits. See *Profits, Wages, and Prices*, p. 124.

[8] *American Economic Review*, XVI, 219.

[9] For a recent article on the theory of interest by H. J. Davenport, see *American Economic Review*, XVII, 636-656. For a statistical study which purports to minimize the element of risk as a factor in interest rates see the *Federal Reserve Bulletin*, XIII, 803-817.

loanable funds. The great bulk of funds are loaned at rates above the rate of pure interest.

The use of funds is sold for various purposes, and each purpose has its own rate. The rates on funds loaned for one purpose are governed by principles that do not apply with equal or similar force to funds loaned for other purposes. For example, distinction must be made between customer-over-the-counter loans and commercial paper loans. Commercial paper is purchased by banks that are strangers to the borrower. Funds put out in this way are governed largely by the principle of overhead cost and what the traffic will bear, very much as goods may be sold abroad at prices below the domestic price, if such foreign price will more than cover the direct cost. In a similar manner, a bank with funds for which there is not sufficient local demand, at the price asked, may dump some funds into another region rather than spoil the local money market. At times the rates on commercial paper may fall much below the rates which the purchasing banks will charge to local customers. At other times the traffic will bear much higher rates than the local rates. The result is a greater proportionate cyclical fluctuation in the rates on commercial paper than on customer loans. Probably call rates are determined by similar principles.

The great bulk of bank funds which are let out over the counter bear very different rates in different parts of the country. One way of measuring this rate as I have shown above is to take the ratio of interest income of banks to the earning assets[10] of the banks. This method shows that for the years 1918-1926 the average rate in Massachusetts in the country banks was 5.36 per cent, in Iowa 6.51 per cent, and in Texas 7.67 per cent. Probably, the factors that are causative of these geographic differences in interest rates are operative with respect to the business cycle. In short, geographic differences in interest rates seem to be due mainly to differences in the risk involved. Probably cyclical fluctuations in interest are also due to risk.

One way to measure the degree of hazard involved in making loans in a given region is to note the losses on loans charged off, divided by the average amount of loans outstanding, including rediscounts. The amount of loans charged off divided by the outstanding loans will give the proportion of the loans that were found uncollectable and may be called the rate of loss.

Two tests may be applied to the rate of loss to show that it is a constituent part of the interest rate. First, several regions may be compared with respect to rates of loss and rates of interest. Second,

[10] Including rediscounts.

the rates of loss and rates of interest in any given region may be compared over a series of years.

The average rate of loss and the average rate of interest correlated as two series, by states, show a high degree of correlation between the two series. For example, the rate of loss and the rate of interest for each of twelve states, selected from various parts of the United States, comprise the two series.

Comparison of Average Rate of Loss on Loans with Average Rate of Interest on Earning Assets of Country Banks, 1918–1926, in Certain States[11]

	Losses %	Interest %	Difference %
Massachusetts	.503	5.36	4.857
Pennsylvania	.313	5.44	5.127
Ohio	.406	5.70	5.294
Iowa	1.046	6.50	5.454
Minnesota	.703	6.40	5.697
Kansas	1.032	6.98	5.948
Colorado	1.740	7.47	5.730
Montana	1.935	7.32	5.385
Virginia	.403	5.56	5.157
Alabama	.861	6.73	5.869
Texas	1.819	7.67	5.851
Kentucky	.389	5.58	5.191
Average:	.929	6.39	5.461
Correlation:	+.918		

If one subtracts the average rate of loss from the average rate of interest state by state, the differences, which thus have the risk of loss eliminated, comprise a series of similar amount in the various states. The differences are thus an approximation to the pure interest rates in the various states. With the risk of loss subtracted, the remaining rate is nearly the same in all the states.

If the loss series by states be correlated with the rate of interest, the Pearsonian co-efficient of correlation is +.92 which is very high correlation. Both of these tests seem to show that risk of loss constitutes the main difference in interest rates or the main variable factor in interest rates as between the different regions.

If a given region is studied, such as New York City or Kansas, and the fluctuation in the interest rates over a period of years is observed, is it not likewise possible and probable that the fluctuations are caused by the element of risk? Let us examine the two series from 1918 to 1926 in New York City. A study of the two series, the rate of loss and the rate of interest, will show cyclical tendencies in both. Data are available only by years, so the cycle trends cannot be clearly shown in detail, but the cyclical trends of the two are very apparent.

[11] Comptroller's Annual Reports.

EFFECT OF ELIMINATING RATE OF LOSS IN KENTUCKY, IOWA, AND TEXAS COUNTRY BANKS

	Average Interest Rates			Interest (Rate of Loss Eliminated)		
	Kentucky %	Iowa %	Texas %	Kentucky %	Iowa %	Texas %
1918	5.16	6.25	7.23	4.82	5.86	6.24
1919	5.08	6.30	7.35	4.84	5.94	6.69
1920	5.40	6.15	7.40	5.18	5.63	5.24
1921	5.86	7.06	8.54	5.39	5.53	5.32
1922	5.93	6.94	8.00	5.50	5.77	5.08
1923	5.57	6.55	7.62	5.10	5.04	5.24
1924	5.80	6.38	7.46	5.34	4.40	5.68
1925	5.80	6.37	7.35	5.21	4.76	5.67
Average	5.58	6.51	7.67	5.19	5.46	5.85

The rate of loss lags behind the rate of interest considerably, probably a year. At any rate, the highest degree of correlation of the two series is obtained by comparing the 1918 interest rate with the 1919 rate of loss, and so on through the series, the rate of loss being lagged or pushed back a year. The correlation for New York City, after allowing one year for lag, for the period 1918-1926, was +.75. The correlation for all national banks in the United States was even higher, being +.77, while for the country banks of Kansas it was +.65. This high degree of correlation also seems to show that the element of risk is closely related to the cyclical trend of interest rates. When the rate of loss is eliminated from the rate of earnings, the remaining rate is about the same in all states, although the rate of interest varies greatly from region to region.

The effect of eliminating the rate of loss from the rate of earnings is well shown by comparing three states whose interest rates differ from each other; namely, Kentucky, Iowa, and Texas. The accompanying table well shows the effect of eliminating the rate of loss.

In this table it will be noted that before the elimination of the rate of loss the rates of earnings in the three states were 5.58, 6.51, and 7.67 per cent respectively, but after the elimination of the rate of loss, the rates become 5.19, 5.46, and 5.85 per cent respectively.

If monthly data were available for the rates of loss and the rates of interest in the various regions, no doubt the cyclical trends of each could be more definitely traced. Furthermore, if the rate of loss were lagged for some length of time other than twelve months, no doubt a degree of correlation even higher than appears from the use of yearly data would be discovered. The coefficient of correlation might thus be found to be +.9 or above.

Why does the rate of loss lag behind the rate of interest? This raises the question with regard to the causative relations between rate of loss and rate of interest. Statistically and mathematically there

Cyclical Correlation of Rate of Earnings and Rate of Loss in Certain Regions, and the Differences Between the Two Rates

Years	Average Interest Rates			Years	Average Rate of Loss (lagged one year)			Differences (loss eliminated)		
	All National Banks %	New York City %	Kansas Country Banks %		All National Banks %	New York City %	Kansas Country Banks %	All National Banks %	New York City %	Kansas Country Banks %
1918	5.53	4.70	6.65	1919	.337	.140	.400	5.193	4.560	6.250
1919	5.44	4.50	6.78	1920	.237	.186	.400	5.203	4.314	6.380
1920	5.60	5.13	6.98	1921	.600	.641	.735	5.000	4.489	6.245
1921	6.40	6.25	7.37	1922	1.190	1.730	1.055	5.210	4.520	6.215
1922	6.13	5.39	7.36	1923	1.024	1.415	1.770	5.106	3.975	5.590
1923	5.36	4.77	7.05	1924	.663	.667	1.623	4.497	4.103	5.427
1924	5.61	4.00	7.02	1925	.763	.665	1.595	4.847	3.335	5.425
1925	5.29	4.22	6.90	1926	.695	.695	1.400	4.595	3.525	5.500
Average:	5.67	4.87	7.01		.714	.767	1.122	4.856	4.103	5.888
Correlation:	+.773	+.753	+.650							

is a close correlation between the two, as has just been shown. The causal relation between the two raises the question of the function of interest rates.

Funds for any purpose have their price or rate, depending upon the purpose or use of the funds. That is, the price of the use of funds should be such as would sufficiently conserve the funds. Just as the price of a commodity should be sufficient to conserve the supply, so should the rate of interest be high enough to conserve the supply of funds. But funds are lost in specific cases and not all cases, and the banker knows fairly well the specific cases in which the probability of loss is greatest. Knowing the specific cases of risk, the banker attempts to conserve funds by making the various types of loans bear their own cost, not merely by having one rate which can be raised to conserve the general loanable fund, but by fitting the interest rate to the risk.

If the reserve ratio and the supply of available funds were the only indices or standards pointing to a need for conservation of funds, then one general rate would suffice, and this rate could be applied indiscriminately to all borrowers. Of course, such a general rate would be raised or lowered as the reserve ratio or the general supply of funds changed. But the function of interest rates is more complex than that. Interest rates are variable, and are adjusted so as to be most effective in conserving loanable funds. Each type of loan, based on the degree of risk, must bear its own cost or provide, through variable interest rates, the means of keeping the supply intact. If the risk

is high, the rate is made high to provide protection to the funds available for that type of loan.

In certain regions and at certain times the risk on loans is greater than at other times, and the rate of loss is greater. A part of the cost of supplying funds is made up of the rate of loss. In regions where the rate of loss is high, the interest rate should be high to cover the cost added by the greater risk. In times when the rate of risk is greater, and the rate of loss is higher, the interest rate should be higher to cover the added cost.

One of the causes of the risk of loss is the rate of interest itself. The higher the rate of interest, the less the possibility and probability of paying back the loan at maturity, and even the probability of its being paid back at all is made less by the higher rate of interest. These forces are mutually causative; high risk causes high interest rates, and high interest rates cause high risk.

The degree of risk is closely related to the net income available for interest payments, and net income shows rather definite cyclical fluctuations. As the net income becomes smaller, banks charge a higher rate of interest. As is well known, corporations that issue bonds are required to have a minimum margin of income over fixed charges before bankers will float the issue. But some companies have a larger margin of income than others, and thus have the advantage of lower interest rates. In the field of commercial banking, also, the rate of interest is closely related to the margin of income. But one of the causes of a narrow margin of income is the rate of interest, which increases the risk. With the cyclical fluctuations in interest rates, the degree of risk may be greatly increased, and the borrower, in order to secure needed cash, may have the option of paying higher rates or of adopting policies of retrenchment and liquidation.

5. *Interest rates and prices.* In most of the discussions of interest in relation to prices, the discussion has turned mainly on the relation of bank reserves to the price level or average of prices, and the relation of both of these to the rate of interest. The argument usually runs something like this: extension of credit on a given volume of reserves is accompanied by, if in fact it does not cause, a rise of prices. Rising prices in turn call for more credit, which process begins to deplete the bank reserves, and finally the interest rate rises to protect the bank reserves. This analysis of interest rates looks mainly to the demand for funds as the explanation of cyclical fluctuations in interest rates.

The analysis of interest rates in terms of demand and in terms of reserve ratios is very useful, but it fails to explain certain outstanding facts. Within any reserve district the rates of interest in one state may be very much lower than in another state in the same district.

These differences are explained on the ground of greater risk and cost rather than on the grounds of unequal reserves or unequal changes in the general price level.

The rate of interest that will be charged a given firm is based on personal, or individual, or type of industry considerations. It is possible for a firm to improve its credit rating and obtain a decreasing rate of interest in a rising market. A given firm may lose credit standing and have its rate of interest raised although other firms are receiving decreasing rates of interest. When a firm is investigated by a bank and granted a loan, the bank certifies to the credit standing of the firm, and places funds at its disposal. Certifying the credit standing really is an estimate of the probability of repayment according to agreement, although such estimate of probability does not involve intricate mathematical calculations. The firms that show the least possibility or probability of repaying as agreed will be charged the highest rate of interest, if granted a loan at all, and the excess of the rate above the lower rates is to repay the bank for the probable cost of placing irrecoverable funds at the disposal of the borrower.

The lowering of the reserve ratio in a given district will not be of itself an impelling motive to a bank to restrict its lending. A bank will restrict its lending if the risks appear too large. As long as the customers of a bank show sound management and a strong credit position, they can procure funds at the banks. A rate of interest charged by the local bank because of the risk involved is to conserve funds. But it is intended to cut down borrowing by specific classes of borrowers (that is, those with the greatest risk) rather than to cut down total borrowing.

As long as a bank has loanable funds and is without the necessity of borrowing from another bank, the rates on the safest loans will be rather low. When the funds are depleted because of large lending and the local bank is compelled to borrow, the rates for safe loans will be increased, because the cost of supplying funds is greater when the bank borrows than when it secures its funds from the depositors in the form of the proceeds of customers loans. So even the fluctuation in basic rates can be correlated with cost of supplying funds. And when the basic rates rise, the constellation of other and higher rates rises also. The degree of variation of the higher rates above the lower and safer rates will be determined by the risks involved. Variation in the higher rates is due then, first, to variation in the base rate, due to cost of supplying funds, and second, to the excess cost due to the risk of supplying funds.

The funds in the reserve banks are more generalized than in the local bank, and practically all risk is removed. The discount rate at the

reserve bank may be regarded as intended to conserve the general supply of funds, but the local rate is adjusted to the specific risk.

One of the greatest hazards that certain types of firms have to meet is the possible fall in the prices of the goods sold or rise in the prices of the material or services purchased. A large part of the financial risk involved in modern business is closely related to prices and price changes, but this risk is associated with specific price trends rather than with the general price trend. The fact that one price rises while another falls makes the credit position of one debtor strong and another weak. As a consequence of price trends, interest rates may be affected. In any given area, if prices trend unfavorably for enterprises, so that the risks are unusually high, the rates of interest may be unusually high, also, in spite of a trend downward in the general price level and in the general interest rate as obtained from an average of all regions of the country.

It would seem then that interest rate fluctuations are to be explained as much by divergent trends of specific prices as by trends in the general price level, and the change in demand due to the general price level affects the risks of given types of firms, and thus affects the basic costs of supplying funds. Wherever these risks increase, interest rates would naturally increase also.

When a bank lends, it cannot know all the risk involved at a given time, so this excess of interest rate over the pure interest rate at any stage in the cycle might not equal the loss which would accrue from unpaid loans at maturity. While I have found a very close cyclical correlation between the rate of loss and the rate of earnings or interest, the rate of loss during any short period of time is also approximately equal to the excess of the rate of interest over the pure interest rate. Subtracting the rate of loss from the interest rate in the various regions gives a series of residual rates that are approximately equal in amount.

When interest rates in the cycle have increased for some time and a borrower finds that divergence of prices has played havoc with his net income, he is ready to consider a change of policy. He may continue to borrow at increasing interest rates and increase his borrowing in order to carry on and wait for better times. The point will finally be reached, however, when he probably will attempt to improve his position by buying less and by liquidating stocks at lower prices. His decision to liquidate hinges largely on the fact that his interest is taking a larger and larger proportion of his net income. His decision to liquidate and improve his cash position has two effects on prices. First, his own prices will decline. Second, the fact that he has cut down on purchases will cause the prices of the goods he purchased to decline.

It is pretty well established that the prices of goods nearest the beginning of the productive processes fall more rapidly and relatively farther than prices of goods nearer the point of consumption. Liquidation, if such liquidation is general in the specific trade, will thus cause price divergence or convergence to take a different trend, and a borrower's credit position may be improved by liquidation; that is, the prices will finally come to the point where his net income can be more secure. Probably the rate of interest is a material factor in the decision to liquidate, and this decision involves changes in price trends, for financial costs continue after demand at the old prices fall off and for a time after liquidation begins.

After the peak of the cycle has been passed, the borrower in order not to demoralize the market, may continue to borrow if he is still holding rather than liquidating. Such borrowing is regarded as speculative and risky and rates on such loans will remain high for some time after the peak of the trade cycle.

It is sometimes stated that interest rates will be affected mainly by the status of bank reserves, but interest rates rise at times when bank reserves are very plentiful, as in 1923 and 1925. Interest rates have as a major function the conservation of funds and include in themselves the cost of supplying the funds. They will be raised as the hazards increase.

During a period of rising prosperity, near the peak, while prices are converging and diverging, there is a greater range of prices or greater divergence of prices than at other stages of the cycle. At this time, value ratios and profits are affected more than at other stages of the cycle. As is known, prices of raw materials and of production goods are rising faster than the prices of goods nearer the point of consumption, thus causing a decline in net incomes in various lines of business. With this change in the degree of divergence and convergence of prices at the peak of the cycle, accompanied by decreasing profits, come changes in interest rates. At such a time, it is very natural that interest rates should rise until after the credit position of firms has become stronger through liquidation and lowering costs.

To the extent that specific prices fall in the period of liquidation, the more difficult it is to finance the business through selling at the old prices; that is, since the goods are sold at falling prices, the gross income will be smaller, and net income will be even smaller in proportion than gross income.

As has been noted, the rate of loss is greater following the years of high interest rates than at other times. The number of business failures is greater in years of high interest rates than at other times. The number which fail also reflects the greater hazard of interest rates. No

doubt the rate of interest is a material factor in the number of business failures. If there were no interest to pay, the number of failures would be far less, assuming the banks would be as strict in passing on loan. If there were no interest to pay, the rate of loss on loans would be less as well, because the amount of interest is a deterrent to the repaying of the principal. This is especially true when the loans are increased at a time when interest rates are high and loans may be increased before liquidation begins.

6. *Summary.* From this analysis it appears that the main variable in interest rates is the element of risk. Changes in the degree of risk, or in the proportion of borrowing firms that have changing degree of risk bring about changes in the general level or average of interest rates. Since the risk involved always varies from region to region and since the cyclical aspects of interest fluctuations have causes and effects that are peculiar to given geographic areas or types of firms, cyclical analysis of interest rates involves a study of geographic forces affecting interest rates. It is not sufficient to consider interest merely from the standpoint of world economy or even national economy.

Risk as an aspect of interest rates is closely related to specific price changes, rather than to the general price level. As far as the general price level is effective, it relates to the cost which a bank incurs in providing sufficient funds. Interest rates and prices are mutually causative in their influences, and each is affected by the other.

At the reserve banks, where available funds are highly generalized and the element of risk is almost entirely negligible, the discount rate may be varied to control the general loanable fund. As the flow of funds recedes from the reserve bank, the element of risk becomes more important, and a wide range of rates is applied to protect the funds and to pay for the risk involved. To the basic cost of supplying funds which involve little risk is added the cost of risk in the regions and industries farthest removed from the central reservoirs of credit. While the reserve ratios and the supply of funds at the reserve banks are important factors in affecting the basic interest rates, the rates paid by industry, trade, and agriculture have the risk element as a major factor, which element is largely independent of reserve ratios, and which shows cyclical trends of its own. Interest rates are more than a barometer to business conditions. They are causative in their influence, influencing prices and values, security values, policies of expansion, and the volume of trade.

INTEREST, PRICES, AND PROFITS—DISCUSSION

J. E. McDonough.—Dr. Mitchell's interesting analysis of the relationship between the interest rate and the business cycle places almost exclusive emphasis on the risk element. Now it would be denying the obvious to re-

fuse recognition to the element of hazard and loss-probability found in the field of banking. Yet there is grave danger of this being unduly stressed and overrated. There is, of course, a risk element in loans, but it is coming to occupy a receding position in the explanation of differences in interest rates as between types of loans, between geographical locations, and between maturities.

Recent figures made available by the Federal Rerserve Board throw considerable light on the extent to which risk is involved in the determination of the interest rates charged by the reporting banks in thirty-four of the largest cities in the United States. From monthly reports submitted by the leading banks in these cities for the seven years ending in 1925, it appears that rate differentials frequently exist under circumstances where the risk element is by no means an adequate explanation of the differences. For example, loans secured by Liberty Bonds were regularly made for higher rates in Chicago than in New York. With the identically same type of security, both high grade and uniform in character, it is extremely improbable that the dissimilar interest rates are to be explained in terms of the risk variations involved. Moreover, during this period of seven years these reports disclose the interesting fact that the highest rates charged by the banks to their customers were consistently on time loans secured by stocks and bonds. Here again the risk element does not suffice to account for such practice. In all probability these time loans collateraled by stocks and bonds represent less risk on the whole than commercial loans on unsecured promissory notes. Current market quotations provide the banker with a ready index of fluctuating values in the collateral and put him in a position to insist on greater margins to countervail shrinking security value. In this connection it might be argued that the difference is to be explained in the provisions of the Federal Reserve Act which permit the rediscounting of customers' commercial paper held by the Federal Reserve Banks but deny this privilege of rediscounting to loans secured by stocks and bonds.

Another significant example of rate differentials is found in the loans of one bank to another.[1] Rates charged for such accommodation are only slightly lower than those on customers' commercial paper; yet interbank loans are admittedly one of the safest loans a commercial bank can make. The risk element here, also, falls short of providing a satisfactory explanation of rate spreads.

Monthly figures for the year 1923 of these reporting banks previously referred to disclose the average high and low rates charged on customers' commercial paper and similarly the average high and low rates on loans secured by Liberty Bonds. Curiously enough the spread between high and low is almost the same for the two very different types of loan. In the case of commercial paper these high and low rates might be explained in terms of poor and good risks, but will variations in risk account for the spread between high and low rates on loans secured by Liberty Bonds? Often the high for both types of loans are the same in a given report from a single city, and frequently the low rates on the two types are identical.

Such instances would seem to indicate that we must look for causes other

than the inferred risk element to explain differences in loan rates. In doing this it is well to distinguish sharply between open market rates of interest and the customers' rate charged by banks to their patrons. The two emerge out of very different sets of business relations. The maturity of notes and their collateral would both be significant in explaining rate differences on the open market, but maturity and collateral figure relatively little in searching out causes of customers' rate differentials. In the latter case the personal relations between the banks and their customers are a powerful determinant of the loan charges to be exacted.

If then the risk element is to be subordinated to a secondary position, what are the salient causes of differences in interest rates charged by the banks to their customers? In a recent number of the *Federal Reserve Bulletin* an extremely lucid article established three important rate-determining factors, viz., geographical differences, personal relations existing between the bank and its customer, and differences in banking costs.

The first of these (geographical differences) finds statistical explanation in the size of the money market to which the given location or city is tributary, and interest rates vary directly with the volume of funds available and the volume of deposits. For instance, low rates are found in Federal Reserve cities and rates slightly higher than these in cities having a branch of a Federal Reserve Bank. Low rates in the East and high rates in the West are indicative of the surplus and scarcity of loanable funds in the two sections. Relations between banks and accessibility to outside money resources also influence these geographical differences.

The second of these factors influencing interest rates is the intangible yet tremendously significant personal relation between the individual bank and its customer. Success in banking makes imperative the establishment of friendly and helpful relations continuously between the banker and his permanent customer. To retain the patronage of the customer who gives promise of large and steady business to the bank is the aim of all bankers; and in the interests of this objective such customers enjoy rate differentials which bear little relation to any risk element involved. Even changes in the risk element of such a customer-account would not necessarily produce corresponding changes in the interest rate charged. The desirability of such a permanent patron as a long-run customer would overshadow temporary variations in the risk incurred.

Referring hastily to the third factor (banking costs), we find on analyzing its composition that interest paid out on deposits and losses suffered on loans, both in their aggregate and in their variability, are not so significant as the ratios of running expenses in accounting for differences in banking costs in various sections of the country.

It would seem then that the risk element in loans as it affects interest rates is probably associated for any important purpose with the second-grade or intermittent borrowers not regular customers. Interest rates for such borrowers might well be oversensitive to risk changes. Indeed, these second-grade borrowers may at times be forced to pay higher rates not because of the increase in risk on their own loans but to compensate for in-

creased risk on permanent customers' paper which the shrewd banker hesitates to saddle with a rate advance. However, to focus attention on such a group is to ignore the great mass of regular customers who also pay interest rates and who are also subject to the vicissitudes of the business cycle.

One does not lightly toss aside a Pearsonian coefficient of correlation of +.918 such as Dr. Mitchell establishes between average interest rates and average rates of loss. Nevertheless, this tendency of rate of loss to correlate closely with the interest rate (as Dr. Mitchell defines it) might conceivably be explained by the probability that second-grade or "risk"-loans absorb the cost of losses for the most part in their higher rate and thus maintain the correlation. Thus "risk"-loan rates might adjust themselves to losses to keep the interest rate (the ratio of total interest received to total earning assets) fairly constant. But such a composite interest rate as Dr. Mitchell's ratio of interest income divided by total earning assets, while convenient for purposes of calculation, is highly fictitious and unreal as a work-a-day interest rate. It is not an interest rate paid by any one class or several classes of borrowers, but the rate of earnings of banks due to their practice of charging interest. This is not necessarily identical with any one of the several interest rates charged. Interest rates conceivably may be causative factors in the business cycle, but this is probably true only of some interest rates or more properly, from our point of view, interest rates to some. These "risk" rates, however, are not of major or predominant importance in the broad field of interest payments.

SHOULD THE DEBT SETTLEMENTS BE REVISED?

By A. Piatt Andrew

Congressman from Massachusetts

In attempting to present to you my conception of the debt settlement problem, I am bound by limits of time to confine myself to particular aspects of the subject, and in doing so I may run somewhat counter to a popular tradition of what is appropriate to an "economist's" discussion of an "economic" subject. For the aspects of this question which seem to me of dominating importance are not of commerce and finance but of ethics and expediency.

The commercial and financial aspects of these settlements have been the subject of considerable research. Numerous studies have been made of the future capacity of the debtor countries to pay, of the possibility of transferring such large sums from Europe to the United States, and of the probable influence of these transfers upon our industry and trade. Whether or not the future incomes of all the countries concerned will allow them to provide the sums involved, and whether these sums can be moved across the sea are questions which I do not intend to discuss. Both are not improbably within the range of human possibility, but both depend upon factors and contingencies which no one can with certainty foresee. And prophecy has been well described as the most gratuitous form of error.

As for the effects of these payments upon our own business, there is doubtless truth in the contention that, since we are asking Europe to pay us an amount in the aggregate four times the value of all of the gold in the rest of the world, these payments will have to be made in commodities or services, and this will have some effect upon our foreign trade. Such large and long continued payments (totaling twenty-two billion dollars) through their influence upon the exchanges and the relative price levels of the countries concerned, will tend to make the foreign market for some of our products less profitable, while encouraging foreign competition in certain lines at home. The tendency will operate upon, and be felt by particular businesses, whether it is recognized as such or not. As the years go by, if the payments continue to be made, we may expect to hear increasing complaints of the limited export market for certain of our surplus products, and more insistent demands for higher protection in particular industries. But the ultimate causes of such conditions are always hard to disentangle and their connection with the debt payments will never be open to proof.

More easy to recognize is the consideration significantly expressed by Secretary Mellon a year or two ago, that the prosperity of Europe is worth more to the United States in dollars and cents than the repay-

ment of all of the war loans put together. But the United States is interested in a prosperous Europe, not merely as a market for the surplus output of our farms and factories although that has a bearing upon our own prosperity, and not merely as a stabilizing influence upon business throughout the world, although that likewise is important for our own business. The prosperity of Europe is of even greater concern to the United States because of the possible contagion of unrest and revolution which discontent in Europe might foster and because of the crucial importance to all of the western world of continued peace, and of orderly political and social progress. In so far as the burden of these war-born payments retards the return of the Old World to normal economic and political conditions, the money which we may receive will be debased with a pernicious alloy. But here again, we have to do with imponderables—factors impossible to weigh—and I shall not dwell upon them.

No satisfactory verdict upon the war loan settlements can be found by merely attempting to determine where the balance of financial or governmental advantage lies. The factors that are involved are not all of a sort that can be reduced to figures and tables and balanced by ordinary methods of bookkeeping. This in fact is what Congress discovered five years ago (in February, 1923) when they set aside all other considerations and instructed the World War Debt Funding Commission to arrange future settlements upon whatever terms the Commission believed to be "just." The year before (in February, 1922), Congress seemed to have thought otherwise. In creating the Commission at that time, and delegating to it authority to negotiate settlements with the nations to which we had extended credits, they had hemmed around that authority with various restrictions. The Commission was to grant to no government a rate of interest below $4\frac{1}{2}$ per cent, to allow no funding to mature more than twenty-five years later (not later than 1947), and to permit no reduction of any part of the sums in question.

The Congress which established the Commission and which had so limited its freedom of action was very different in personnel from the Congress that had originally authorized the credits. It was separated by two elections and a political landslide from the war-time Congress. A large proportion of its members had had no part in the war loan legislation, were but vaguely conversant with the circumstances surrounding the origin of the loans, and were more optimistic than informed as to the possibilities of their repayment. Before a single settlement had been negotiated, the limitations which they had imposed upon the Commission were recognized to be impracticable, and the first and only settlement submitted by the Commission under the 1922 law—that with Great Britain—did not conform at all with the prescribed terms.

Nevertheless both houses of Congress approved that settlement with little opposition and scarcely any discussion. The vote in the House stood more than 6 to 1 in favor of it (291 for to 44 against). The Senate endorsed it by a majority of more than 5 to 1 (70 for to 13 against). This vote in itself indicated that Congress was not wedded to the terms it had named, but was ready to allow great latitude in handling the problem. This was still more clearly evidenced by the fact that forthwith all of the previously enacted restrictions upon the Commission's authority were removed, and the Commission was given carte blanche to negotiate succeeding settlements upon one condition, and one condition only—that they should believe the terms to be "just." After February, 1923, there were to be no more legislative proscriptions as to rates of interest and dates of maturity, or even as to the reduction or cancellation of the debts. Congress told the Commission to go ahead with the other settlements, and only asked from that time on that the settlements should be "just."

Whatever the Commission has recommended in each of the dozen subsequent settlements has been approved without much debate by immense majorities in both houses. Congress has never modified the slightest detail of any proposal that the Commission has made. It has never added a comma, changed an article, dotted an "i," or crossed a "t." Congress ratified the Belgian settlement which varied still more widely from the original proscriptions, by a majority of more than 12 to 1 in the House and nearly 3 to 1 in the Senate. And even the settlement with Italy, which was far less exigent than any of the others, was endorsed in the House by a vote of 257 to 133, and in the Senate by a vote of 54 to 33. It cannot be fairly said that the Debt Funding Commission after February, 1923, was in any way constrained by the attitude of Congress to drive stiff bargains with any of our war-time partners. On the contrary there is every reason to believe that if the Commission had recommended settlements of a character much more generous, Congress would have accepted them just the same. This may be said to have been partly due to their high regard for the personnel of the Commission and partly to the fact that they were not in a position to know anything beyond what they were told about the complicated calculations having to do with economic conditions in distant countries and a remote future upon which the settlements were based. But above all, the ready acquiescence of Congress must be credited to the anxiety of the majority of members, irrespective of party, to get this thorny question out of the way.

The Act of February 28, 1923, as we have seen, gave to the Debt Funding Commission a single mandate with large discretionary power in its interpretation. They were to make settlements with other gov-

ernments upon such terms as they "may believe to be just." In construing this mandate the Commission at an early date arrived at a method of procedure which greatly simplified their subsequent labor. They boiled down and standardized what they "believed to be just" into three general formulas which thereafter had only to be applied to particular cases, a task that could be largely delegated to one or two of their members or to some of their assistants.

The three formulas and their explanation, so far as reasons for them are discernible, were the following:

First. To quote the words of the Chairman, Secretary Mellon, the Commission felt that "repayment of principal is essential in order that the debtor might feel that it had paid its debt in full (sic) and that we might know that we had our capital returned to us (sic). The Commission felt, therefore, that no funding should be made which did not repay the principal, and thus we have maintained the integrity of international obligations" (sic).[1]

Second. They felt that the repayments of principal should in every case be distributed over sixty-two years, no matter what the character of the debt, and no matter what its size, whether it amounted to one million or several thousand millions of dollars. Just why the number "sixty-two" should have been chosen has never been clearly disclosed. It seems to have been due to the belief that this was the smallest number of years in which the largest of our war partner's accounts, reaching well into the billions, could be acquitted "in full," which Mr. Mellon had said was "essential." Why the identical period should have been uniformly applied to the settlement of each and every account was also never explained. The standardization of maturity dates to be sure solved automatically one of the problems involved with every country and reduced by so much the labor of making particular settlements, but obviously it resulted in absurd arrangements for some of the smaller accounts. To name only a single example, one of the ex-enemy governments which borrowed after the war a sum of less than two million dollars will be paying the United States until the year 1985 annual driblets that never reach as high as eighty thousand dollars.

Third. They felt that the rates of interest to be paid during these sixty-two years should be determined by estimates of each country's "capacity to pay." "It is felt," said the Report of the Commission for 1925, "that the lack of capacity of a government . . . . can be readily met by appropriate adjustment or modification of the rates of interest to be paid during the period of repayment of principal. And in examining the capacity of payment, the Commission looks not only at the immediate capacity, but estimates, so far as it is able to do so,

[1] *Combined Annual Reports of Debt Commission*, p. 289.

the future development of the nations concerned." Quoting again from the same report: "The adjustments made with each government must be measured by the ability of the particular government to put aside and transfer to the United States the payments called for under the funding agreement."[2] The same conception was made even more clear in a statement referring to the French negotiations: "We believe it is fully recognized by the Commission that the only (sic) basis of negotiations fair to both peoples is the principle of the capacity of France to pay."[3]

Reduced to its lowest terms then, the Commission held that the sole rule for "just" settlements was to demand from our principal war partners as much as they would be able to pay of capital plus interest between now and 1985 (or 1987), and, so far as the other countries were concerned, to stretch their payments over a similar number of years without regard either to the character of their borrowings or to their particular ability to settle more promptly. The rule of "capacity to pay," in other words, was to be applied to the major settlements but not to be bothered about in dealing with the others.

Having formulated these general criteria of the terms which they "believed to be just"—and so far as their statements, reports, and speeches disclose, these were the only criteria which they regarded as worthy of attention—the Commission as a whole was not obliged to participate in the actual negotiations which for the most part were conducted by Treasury officials. "In applying these principles," as the Report for 1925 states, "the Commission through its experts, and through the foreign representatives of the State and Commerce Departments, has assembled and studied the economic and financial data available regarding each of the foreign debtors. With this information before it, the Commission has been able to examine critically similar data presented by the representatives of the several governments in their debt settlement negotiations and to estimate, with as reasonable accuracy as conditions permit, the capacity of payment of the particular government."[4] There is reason to believe that even in certain of the most important settlements several, and probably the majority, of the members of the Commission not only had little to do with the actual negotiations, but had never heard any discussion of the points at issue, or even seen the representative of the Allied nation until the agreements were presented to the Commission as a completed whole for acceptance and signature.

It is not to be doubted that those charged with the actual negotia-

[2] *Combined Annual Reports*, p. 38.
[3] Statement of October 1, 1925.
[4] *Combined Annual Reports*, p. 38.

tions faithfully executed to the best of their ability the dictates of the Commission. They not only treated the principal war loan accounts according to the rules and practices customary in settlements with insolvent business firms, but, according to the Commission's instructions, they went considerably further than that, and extracted from the bankrupt governments pledges of capacity payment for several generations. Secretary Mellon was probably well within the truth when he asserted, "We have, I believe, made for the United States the most favorable settlements that could be obtained short of force."[5] But whether or not the Commission's policy correctly interpreted the instruction of Congress to arrange "just" terms, that is to say, whether or not in formulating the tests of such terms the Commission took proper account of all of the factors that justice demands, is another story.

Unquestionably the difficulties in the way of determining "just" settlements were greatly simplified by resting on the sure ground of the letter of the law, and not venturing into the less clearly marked fields of equity. It was far easier to argue that loans are loans and that contracts are contracts, and to demand "the due and forfeit of the bond" than to try and search justice in the borderlands of reason and conscience outside of the written law. Yet no thoughtful person would claim that all loans are alike in the binding force of their obligations. If during a great conflagration a citizen loaned fire extinguishers to his neighbors to use in putting out a fire which threatened his home as well as theirs, few would assert that the debt so contracted entails the same moral obligation upon the neighbors as would be entailed had they purchased these extinguishers on credit in the normal course of trade. Loans to be sure are loans, but if the extinguishers that he lent were destroyed in saving the city, he would scarcely feel warranted in demanding from his neighbors, particularly if they had suffered far greater losses than his own, their repayment with all of the interest they might be able to pay for interminable years. And similarly, if a country were engaged in a war which it was itself helpless to prosecute, and it loaned to other countries engaged in the same conflict the guns, shells, uniforms, chemicals, food, and other necessaries of war which they used in combatting the common enemy, and these things were consumed in the process, although loans are loans, some will question whether the lending country would be justified in demanding from its partners, especially if they had made vastly greater sacrifices in the conflict than its own, the payment of all that they might be able to pay for several generations.

During the Civil War many northern men drafted for the Union Army considered themselves for one reason or another unprepared to

[5] *Ibid.*, p. 302.

serve, and offered money to others to go in their stead. Sometimes such money was offered in the form of loans to meet the substitute's expenses or to provide for his family while he was at the front. When the war ended if the veteran returned impoverished and disabled, perhaps minus an arm or a leg or a foot, although loans are loans, it would be rather generally agreed, I presume, that the lender was somewhat cold blooded who insisted upon "the most favorable settlement that could be obtained short of force."

Not unlike is the case of a government at war, which, unprepared for most of its time in the war to put men in the field, placed money at the disposal of other governments to enable their sons to continue fighting and to feed and clothe these men's families while they fought. If, when the war ended, some of these governments in consequence found themselves bankrupt, with millions of widows and orphans and mutilated victims to support, and many hundred thousand homes, farms, and factories to rebuild, although loans are loans, many, I am sure, would doubt whether the government which by lending money had spared its own men, could justly ask that the principal of all of its loans be repaid with all of the interest its partners might muster during more than three score years.

Yet this is exactly what happened between the United States and its war partners and which the Debt Funding Commission believed to be just. No one who remembers the circumstances surrounding the origin of our Allied loans, or who has read the laws which authorized them, or the speeches about them in Congress at the time, can believe that they were created for any other purpose than to enable the United States to carry on by proxy its own battles, in which it was unable for more than a year to participate in any other substantial way. If these loans brought benefit to Belgium and France and the other Allies that benefit was only incidental and was not the purpose of the loans. During the years before we engaged in war no one had ever thought of our government's extending credit to any of these countries, no matter what their straits, and our people would rightfully have resented any such suggestion. But in April, 1917, Congress independently and in recognition of our own manifold grievances had decided that we must fight if we were to preserve the rights and property and lives of our citizens, and the integrity of our territory. The President had pledged to the task "our lives and our fortunes, everything that we are and everything that we have." Then suddenly we awakened to the fact that we had no army to place in the field, and that even with prodigious effort, we could not hope to have one for more than a year. The loans that Congress immediately decided to make were not a contribution to the allied cause. It is scarcely correct to describe them as our con-

tribution to the common cause. They were strictly speaking our contribution to our own cause, and the most substantial contribution that we were able to make to that cause during all but four of the nineteen months that we were in the war. Their sole object was clearly stated in the opening words of the authorizing act. These credits were to be extended to the Allied governments "for the purpose of more effectually providing for the national security and defence [meaning our own security and defense] and prosecuting the war" (meaning of course our own war).

No other thought was ever mentioned in any of the speeches when the bill was before the Senate and the House. Said Mr. Mann in the House, "We are not prepared to fight with our army . . . . . The only way left is to help finance those nations who are fighting our enemy." Said Mr. Madden, "We are not prepared to furnish the men today, and somebody else is prepared to furnish the men if we furnish the money." Said Mr. Kitchin, Chairman of the Ways and Means Committee, who introduced the measure in the House, "We will be fighting with our money our battles." Said Senator Smoot, "I think that every dollar that will be expended under the provisions of this bill . . . . will be for the benefit of the United States, whether spent by us, or by the Allies." Said Senator McCumber, "While we are recognizing that we are putting seven billion dollars into the battle, we must not fail to recognize that we are not as yet putting in a single one of our American soldiers, while blood is being poured out by our allies in unstinted measure." Said Senator Simmons, who introduced the bill and explained its purport in the Senate, "Let us do this in the spirit of men . . . . who are entering into it without thought of profits, without thought of financial loss . . . . without thought of the sacrifice, but ready and willing to make every sacrifice."

I shall not tax your patience with further quotations, but what was said by all of the leaders in the Senate and House without exception, by men of the East, West, North, and South, by Republicans and Democrats alike, coincided in regarding the use of our credit as a fortunate means of escape from the embarrassment of having engaged in a war, which, because of our unpreparedness, we were otherwise unable to carry on. The credits, which it was understood would for the most part be expended for supplies in the United States, were not treated in the discussion as ordinary loans, much less as investments. With the conflagation raging at our doors, the Congressmen and Senators of 1917 were little concerned with how or when or whether these supplies would be returned. Doubt was expressed as to whether the credits would ever be repaid, and indifference was declared both by Democratic and Republican leaders as to their repayment, and these doubts and

declarations of indifference were not seriously challenged. Facing the necessity of instant action those in charge of the bill seem to have selected the form of a loan without deliberation as the quickest and simplest way to distribute our supplies among our several war partners where they would be most effective. They were not concerned with terms, but only with how they could encourage and aid our associates to go on with the war, since this was the one and only way in which we were prepared to take a part.

It is easy enough today, overlooking these facts, to point to the specific terms of the Act adopted with so little deliberation during the first anxious fortnight after Congress declared war. It is easy to point to promissory notes signed by Allied ambassadors agreeing to pay on demand the dollars that were placed at their disposal (terms, by the way, which no one at the time expected to be met). The task of Mr. Mellon and his Commission in devising formulas for settlements was greatly simplified and facilitated by confining their attention to the literal text of these documents.

Determination of justice, however, is by no means so simple a matter. It sometimes requires that we look beyond the letter of the bond. The lender of fire apparatus to whom allusion has been made might have a technical right to be reimbursed by his neighbors, and the war-time draftee might have a legal claim on the substitute whom he "hired" by a loan. Yet conscience and reason might justify neither the one nor the other in pressing his claim. The loan of material in a catastrophe to protect both lender and borrower from mortal danger is essentially different from an ordinary business loan, no matter what the Debt Commission may say. It differs not only in its nature and purpose but in the moral obligation that is entailed as well. A loan to hire someone else to risk his life in the war of one's country when it was the lender's manifest place to offer himself, is likewise not assimilable to the loans of industry and trade.

The loans extended by the United States to its war partners partook of the character of both of these examples. They were made in a moment of imminent catastrophe with the intention of protecting the lender rather than the borrower from peril. They may have rendered inestimable service to the borrowing governments but their primary purpose was to help the United States win the war in which it was engaged and to help in holding the line of battle against this country's enemies. Under the terms of their authorization these loans could not be granted for any other object, and from the first loan to the last, even those made after the Armistice, every dollar that was lent was

spent for purposes approved by our Treasury as contributing to that end.[8]

Moreover these loans were used, if not to induce, at least to aid others to risk their lives in our stead. During fourteen months between our declaration of war and the beginning of our participation France alone lost two hundred seventy thousand dead and nearly half a million wounded fighting what then were our battles as well as her own. How many were killed or mutilated during the same period in the armies of England and Belgium and Italy, I cannot say, but not improbably their casualties in the aggregate were equal to those of France, which would mean that our partners in the war gave half a million lives and saw a million of their men disabled in holding the enemy back while the war was our war and we were taking no part in its sacrifices and dangers. We furnished the uniforms which these men wore, the rifles that they carried, the shells that they fired, the food and tobacco which they consumed, and we sent them food and clothing for their wives and children. That is to say, we sold these things to their governments at double and treble their normal prices and lent them the money with which to pay.

In arranging for the settlement of such loans, the Congress of the United States, with a spirit of wisdom and fairness, instructed the Debt Funding Commission to devise such terms as they believed "to be just," and Congress, trusting that they had done so, rapidly and blindly accepted the Commission's recommendations with little scrutiny and without the slightest change. Careful study of the Commission's reports reveals, however, no evidence that the Commission devoted any attention to the equities that were involved. It shows only that they followed the easiest way, rested their case on the letter of the law, demanded "the due and forfeit of the bond," and reduced the tedium of their labors by standardizing the supposed requirements of justice into a simple formula. So far as settlements with our leading partners in the war were concerned, this formula as we have seen demanded repayment of the principal of their borrowings in full, together with as much interest as it was estimated that these countries might be capable of paying during sixty-two years, in addition to interest for the eight or nine years already elapsed.

There may be those who believe that such settlements will stand, but I have too much confidence in the judgment and conscience of the American people to be of their number.

[8] Cf. article by Assistant Secretary Rathbone in *Foreign Affairs*, April, 1925, pp. 397-398.

AN EXAMINATION OF THE REASONS FOR REVISION OF THE DEBT SETTLEMENTS

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So much has been written on this subject, and frequently with so much heat, that it is difficult to approach it without being suspected of bias. In order to obtain an objective point of view it therefore seems desirable to detach oneself as far as possible from the immediate environment of the discussion and approach it from an unprejudiced standpoint. For this purpose I propose to view it from the vantage ground of the economic historian.

Let us consider ourselves transported to the year 1984, when the sixty-second and final payment has been made by the British government to the United States, and finis has at last been written upon this long drawn-out chapter of war finance. Now that the business is concluded we can discuss it calmly. Realizing the importance of this historic event, I make my way to the Treasury Department, and there I ask one of the assistant secretaries if he believes that the cessation of payments on account of the Allied debts will seriously affect the federal budget or our international balance sheet. He looks at me in surprise. "Payments on account of Allied debts," he exclaims! "Why, there haven't been any for fifty years. That matter was adjusted before I was born."

Here was an extraordinary situation. What had happened to those carefully drawn-up funding agreements? When we examine the musty documents of the twenties for an explanation, we discover that scarcely was the ink dry on the funding agreements before protests began to be made and pleas entered for revision. Among the many documents which voiced this demand I shall select two as especially noteworthy. These were, first, a statement by members of the Faculty of Political Science of Columbia University on the war debt problem, and, second, an endorsement of that statement by members of the Faculty of Princeton University. Said the Columbia statement: "In our judgment the war debts settlements are unsound in principle. . . . . We do not urge that the debts be completely canceled. . . . . What we do urge is complete reconsideration in the light of present knowledge. To this end we believe that an International Conference should be called to review the entire problem of debt payments, and make proposals for readjustment." This was followed by explanation and argument. The Princeton statement contented itself with endorsing "the desire, expressed by the Faculty

of Political Science of Columbia University, for a reconsideration of the settlement of the Allied Debts."[1]

These statements elicited from the Secretary of the Treasury, at that time Mr. Andrew W. Mellon, a sharp reproof. Adverting to the fact that France had not yet ratified the agreement submitted to her, he urged "that the inevitable effect of such a pronouncement would be to strengthen and encourage the opposition in foreign countries to such ratification. . . . . Reopening all of the settlements would, in my judgment, be a step backward and not forward and one calculated to produce discord and confusion rather than contribute to the economic stability and orderly betterment of world prosperity. . . . . The outstanding fact is that these debts have been settled. A fair trial can now be had, not on theory, but in practice, and a reopening of the whole question at the present time would do more to interrupt the steady progress achieved since settlement than might be gained from any ultimate minor adjustments that can be effected."[2]

The issue thus set forth did not seem, however, to have been fairly joined. The professors wished the funding agreements to be revised because the advances should not be regarded "as business transactions, but rather as joint contributions to a common cause," because the application of the formula "capacity to pay" resulted in unfairness and misunderstanding, and because the economic consequences of debt payment would be undesirable, not only for the debtor countries but also for the United States. The Secretary of the Treasury, on the other hand, emphasized the legality of the debts and insisted that the economic stability of the world would be promoted by a definite settlement which would permit the debtor nations to frame exact budgets. In favor of revision the arguments were ethical, political, and economic, while those against revision were legal and accounting.

As I look back upon this period, I confess that I am somewhat surprised at the inability of contemporary writers to visualize somewhat more clearly the inevitable logic of events leading to revision.[3] More than one occasion presented itself which compelled the reconsideration of this question. In the first place, there was the continued German protest after 1928, when their reparation payments under the Dawes Plan reached the maximum of two and one-half billion marks, resulting in another international conference and the final agreement upon a lump sum in composition of the indeterminate annual payments. It had, of

[1] These statements are conveniently found in *International Conciliation* (Carnegie Endowment for International Peace, New York City), May, 1927.

[2] Letter of Secretary Mellon to Dr. John Grier Hibben of Princeton University, March 15, 1927.

[3] It is true that some writers regarded the funding agreements as temporary. Cf. L. V. Birck, *The Scourge of Europe* (London, 1926), p. 253.

course, long been recognized that the Dawes Plan had been a mere temporary arrangement, for the payments therein stipulated did not suffice to cover even the 6 per cent interest and sinking fund charges on the fifty billions of A and B bonds provided for under the London agreement, and left the eighty billions of C bonds wholly unprovided for. In spite of the reparation payments of two and one-half billion marks a year, therefore, Germany was sinking ever more deeply into debt. The inevitable conflict, moreover, between the reparations payments and the claims of the domestic budget, which first presented itself sharply toward the end of 1927[4] became each year a more serious issue. The impossibility of such a situation was at length recognized, even by France, and the reparation debt was finally fixed at a reasonable total. Although the Government of the United States claimed that the foreign debts owing us were wholly unconnected with reparations, the effect of this revision had a profound effect upon the attitude of the people of the United States towards the debt payments to us. It was clear that the capacity of the debtor countries had been adversely affected by the cessation of the reparation payments.

The overthrow of the Fascist Government in Italy, and the long-continued financial disorder which followed, resulted in the cessation of payments by that country to the United States and cast doubt upon the validity of the formula "capacity to pay" when applied to the future.

The extinction of the national debt in the United States by 1942 would have raised the issue again if revision had not already taken place. Not only were the payments from foreign governments applied to the reduction of the national debt, but enormous sums were collected from the American people, and, in accordance with approved financial policy and established practice, were used for the same purpose. During the five years 1922-1926 the debt was reduced about $4,250,000,000 or an average of $850,000,000 a year, which was far in excess of the sinking fund requirements. For the fiscal year 1927 the debt payments amounted to $1,083,645,440, and for 1928 they were estimated at over $1,000,000,000. As a result of a long and practically uninterrupted period of prosperity, the United States was even able to accelerate the process of debt extinction in subsequent years. The bonds were retired as they fell due and the option of the Government was exercised on large blocks of callable bonds before they matured, so that the debt was practically expunged by 1942. By that time the annual installments from our foreign debts would have increased to

[4] See Memorandum of S. P. Gilbert, Agent General for Reparations Payments, to the German Government, protesting against certain expenditures, *The Literary Digest*, Dec. 3, 1927.

$365,000,000, and the same question would have presented itself again in aggravated form. Should the United States continue to collect these sums after the Liberty bonds which originally represented them had been retired? Whatever the attitude of the people of the United States may have been in 1927 toward the payment of these obligations by foreign governments, it is clear that the payments could not have been collected uninterruptedly for sixty-two years. Time and again this issue was raised until a settlement was effected along the lines of the final German reparation agreement by the payment of a comparatively small lump sum.

As a matter of fact I have wondered, as I have read these old documents, if the astute Secretary of the Treasury did not have his tongue in his cheek as he penned those animadversions against the college professors for suggesting a revision. The funding agreements, which ran for sixty-two years, called for small annual payments for the first decade and increased the amounts gradually. Since we now know that a drastic revision downward was made within a decade and that shortly thereafter the debt payments entirely ceased, we must conclude that the World War Foreign Debt Commission paved the way for the greatest possible debt remission, although at the time it saved its face among its contemporaries.

But we find that another difficulty presented itself in the attempt to estimate the amount and burden of the debts. The total principal of the debts, including arrears of interest, which were fixed under the funding agreements, was $11,522,000,000, and the total amount of interest which was to be paid during the life of these agreements was $10,621,000,000, or together a total of $22,143,000,000.[5] This sum was so enormous and it was spread over so long a stretch of time that it was difficult for contemporaries to grasp it. In order to render it more comprehensible, the then Secretary of the Treasury, Mr. A. W. Mellon, at various times calculated the "present value." But it is evident that such an estimate depended upon the rate of interest which was employed in making the calculation. Mr. Mellon himself fell into hopeless contradictions by using different rates at different times. Thus, when he was arguing before a committee of the House of Representatives in favor of ratifying the French funding agreement, he stated that the present value of their debt on a 3 per cent basis was $2,734,000,000,[6] but when he was trying to prove to Mr. Frederick W. Peabody that 58 per cent of the French debt had been cancelled under the Berenger

[5] A detailed table by countries is given in Moulton and Pasvolsky, *World War Debt Settlements*, p. 94.

[6] *Treasury Report*, 1926, p. 252.

agreement he calculated the present value of the same debt on a 5 per cent basis as $1,681,000,000.[7]

Whatever merit such a calculation may have had from an accounting standpoint it is evident that it could have offered little assistance in an effort to assess the present burden of the debts to the debtors or their benefit to the United States. For this purpose it is preferable to take the annual payments which were to be made. Taking the thirteen principal countries involved, including the sums proposed for France, we find that the total annual payments to the United States under the debt funding agreements in force on December 1, 1927, amounted during the first ten years on the average to $204,000,000;[8] during the second decade to $321,000,000, and for the next four decades respectively to $365,000,000, $377,000,000, $393,000,000, and $414,000,000. These were the sums which alone could have had

[7] *Op. cit.*, p. 261. The total amounts which have been written off or cancelled depends upon the interpretation of a "fair" rate of interest. The following table shows the extent of cancellation brought about by the reduction of the interest rate below what is usually considered to be a "fair" or "normal" rate, ranging from 3 to 5 per cent.

	Cancellation		
Country	at 3%	at 4¼%	at 5%
Great Britain	+7*	17	28
France	32	52	58
Italy	62	75	79
Belgium	28	46	54

* The average interest rate over the whole period of sixty-two years is 3.3 per cent in the case of Great Britain; therefore, upon the basis of a 3 per cent normal interest rate, Great Britain was overcharged. *(International Conciliation*, No. 230, May, 1927, Carnegie Endowment for International Peace.)

Fuller tables, though computed on a somewhat different basis, are given in Moulton and Pasvolsky, *World War Debt Settlements*, pp. 97, 99.

[8] The following table shows the proposed payments for the first decade:

SCHEDULE OF DEBT PAYMENTS TO THE UNITED STATES UNDER THE FUNDING AGREEMENTS*
(000 omitted)

By	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	Annual Average 1923–32
Great Britain	$161,000	$160,310	$160,620	$160,900	$160,150	$161,400	$160,590	$160,780	$159,940	$161,100	
Finland	315	314	314	315	314	315	314	315	313	314	
Hungary		68	68	68	67	67	68	68	68	68	
Lithuania			211	210	210	210	210	210	210	210	
Poland	5,917	6,265	6,262	6,259	6,255	6,250	6,244	6,237	6,230	6,222	
Belgium				2,840	3,100	3,450	3,700	3,950	4,550	5,050	
Latvia	201	201	202	202	202	202	202	202	202	202	
Czeckoslovakia				3,000	3,000	3,000	3,000	3,000	3,000	3,000	
Estonia	484	484	484	484	484	484	484	484	485	484	
Italy				5,000	5,000	5,000	5,000	5,000	14,621	14,706	
Rumania				200	300	400	500	600	700	800	
France				30,000	30,000	32,500	32,500	35,000	40,000	50,000	
Jugoslavia				200	200	200	200	200	225	250	
Total	$167,917	$167,642	$168,161	$209,678	$209,282	$213.478	$213.012	$216,046	$230,544	$242,406	$203,817

* *Combined Annual Reports of the World War Foreign Debt Commission. Fiscal Years 1922 to 1926.* (Washington, 1927.) Pp. 89–287, *passim*. This table does not include the following countries, which also were indebted to the United States: Armenia, Austria, Greece, Liberia, Nicaragua, and Russia. The debts of Armenia ($16,057,184 on Nov. 15, 1926) and Russia ($270,599,640) may be written off as uncollectable; Austria has been given a moratorium to 1943; the debts of Liberia ($34,718) and of Nicaragua ($ 6,883) were trifling; that of Greece ($18,750,000) was funded in December, 1927, under an agreement calling for annual payments of about $600,000. The inclusion of these payments would not materially affect the totals of the above table.

importance for the people at the time and whose payment could have affected their fiscal and economic fortunes.[9] Here we have the crux of the problem which the payment of these debts offered. What consequences did these payments have for the United States and for the states which made them? To this question we must next address ourselves. Fortunately, the material at our disposal permits a fairly accurate answer.

In a hearing before the Ways and Means Committee, on January 4, 1926, Mr. Mellon made the following statement:[10] "There are three principal factors in the finances of any country which furnish indices by which a comparison of the weight of a new fiscal burden can be measured. These are the total budget, representing what all instrumentalities of government collect from the people; the total foreign trade, which has a bearing on the capacity to transfer payments abroad; and the total national income, which is the ultimate source of a country's capacity to pay."

Before using these indices to determine the weight of the burden to the debtors, let us apply them to the creditor in order to ascertain how great the importance of these annual debt payments was to the United States. The total receipts of the United States Government for the fiscal year ending June 30, 1926, were $3,962,255,690. The debt payments during the first decade—$204,000,000 a year—amounted to about 6 per cent of the then federal revenues, or less than the amount of the annual surplus from one year to another. But since part of the tax reduction which their receipt permitted occurred in the income and profits taxes, let us estimate the savings in that branch. Income taxes returned $1,982,040,088 in 1926, which would have been reduced about 12 per cent if all the debt receipts had been applied to this purpose. If the payments had been spread evenly throughout the population, they would have amounted to less than two dollars per capita. It is evident that the fiscal importance of the annual payments on account of these foreign obligations was slight as compared with the domestic taxes.

The same conclusion must be drawn when we try to gage the significance of these payments by applying the index of foreign trade. Our merchandise imports, which were primarily affected, amounted to $4,430,890,000 in 1926 and of these the annual debt payments constituted about 5 per cent or less than the average annual fluctuations in this item. But it is when comparison is made with the national income that the relative financial unimportance of these payments becomes

[9] It should in fairness be recognized that some of the earlier writers, in discussing the economic effects of the presumed debt payments, were dealing with larger sums than those finally determined by the funding agreements.

[10] *Treasury Report*, 1926, p. 211.

clearest. Accepting the figure of $90,000,000,000 as representing the total income of the people of the United States in 1926, the annual payments of $204,000,000 in that year constituted only one-quarter of 1 per cent of this sum.

It is usually stated that international payments have to be made in gold, in services, or in commodities.[11] The first of these need detain us but a moment, for it is evident that no considerable proportion of the debt payments could be effected in gold. In the first place half of the world stock was already in the United States,[12] and the remainder would suffice to pay only a small part of the total debt even if it could have been used for this purpose. And in the second place, under the then existing circumstances, neither the United States wished to receive, nor the debtor countries to pay, gold.

Services may be understood to comprise all the debit items not included under gold or merchandise or movements of capital, which will be separately discussed. The most important of these were tourists' expenditures, ocean freight payments, immigrants' remittances, contributions to foreign missions, relief work, and similar enterprises abroad, governmental expenditures in other countries, and various small miscellaneous items. Some of these were small and relatively unimportant, like governmental expenditures abroad, payments for insurance to foreign countries, for Canadian electric power and for foreign advertising; the total of all these miscellaneous items for 1926 was $111,000,000.

Ocean freight payments were a fluctuating item, having run in our favor for a few years, though apparently finally settling against us. In the period 1896 to 1914 we remitted abroad annually an average payment of about $33,700,000 for maritime freight charges. From 1914 to 1918 our net freight bill amounted to about $36,670,000 each year.[13] For 1919 and 1920, however, the situation was reversed as a result of the building of a new merchant fleet, and our net freight earnings amounted to about $93,000,000 annually. This was the high water mark, and in 1921 they were $33,000,000 and in 1922 only $7,000,000. After that ocean freights constituted a debit item, except for 1924,

[11] Not until we became a creditor nation was any serious study made of the international balance sheet of the United States, except for an investigation carried out by George Paish in 1910 for the National Monetary Commission. An historical and descriptive account of our balance of international payments from 1789 to 1918 was made in 1919 by C. J. Bullock, J. H. Williams, and R. S. Tucker in *The Review of Economic Statistics*, and since 1922 the Bureau of Foreign and Domestic Commerce has published an annual statement.

[12] At the end of 1925 we had $4,409,000,000 or 46 per cent. *Treasury Report*, 1926, p. 702.

[13] F. A. Vanderlip and J. H. Williams, *The Future of our Foreign Trade: a Study of our International Balance in 1919*, p. 26.

and in 1926 our net foreign freight bill amounted to $62,000,000. In subsequent years it gradually increased.

Immigrant remittances showed a steady decline after the World War, and the same was true of contributions to foreign missions, relief work, education, and scientific research. The net remittances for all these purposes steadily shrank from about $700,000,000 for 1920 to $333,000,000 for 1926.[14] The decline continued thereafter, but not so rapidly.

For the period before the World War tourists' expenditures abroad had been variously estimated at between $150,000,000 and $200,000,000 a year net. During the War they shrank to about $50,000,000, but after 1920 they showed the most astonishing growth, reaching the high point of $646,000,000 net in 1926.[15] If we fix our attention on the annual installments of $204,000,000 which were paid the United States under the funding agreements during the first decade it is clear that these were completely absorbed by the expansion of this one item, which, moreover, grew still further in subsequent years. More than one doubtful conclusion was drawn by considering the total debts rather than the annual payments.

The third method by which the payment of the funded debt could be effected was by the shipment of commodities to the United States. It was usually assumed by contemporary writers that this was practically the only way by which the debts could be paid, and consequently most discussions of the economic effects of debt payment centered about the industrial consequences of increased merchandise imports and of relatively decreased merchandise exports. In considering this aspect of the problem it will be convenient for us to make the same supposition as was made by those earlier writers and to assume that practically the entire debt payments were effected by shifts in our international merchandise balance sheet. It will then be necessary to answer two questions: first, whether we actually absorbed additional merchandise imports, sufficient to pay the annual installments on the debts, and, second, what effect this increase in our imports had upon our domestic industry and upon our export trade.

During the six years, 1921-1926, our total merchandise imports showed an average annual increase of $384,500,000 or almost 90 per cent more than the annual debt payments of $204,000,000 for the first decade. The question "Could we absorb these debt payments by addi-

[14] Ray Hall, *The Balance of International Payments of the United States in 1926*, Dept. of Com., Trade Sup. Bull., No. 503, Aug., 1927. p. vi.
[15] Hall, *ut supra*, p. vi.

tional merchandise imports?" seemed to be conclusively answered by the fact that we actually more than absorbed them.[16]

But it is not enough to calculate the changes in our total import trade; its composition was also of importance. Imports fall into the three main groups of foodstuffs, raw materials, and manufactures, and each of these will be examined in turn. Of our imports of foodstuffs sugar and coffee together made up 60 per cent, and the expansion in our consumption of these two articles alone in the six years, 1921-1926, absorbed 85 per cent of the annual debt payments. The importation of sugar, mostly from Cuba, grew from an average of 4,384,000,000 pounds for the period 1910-1914 to 8,337,000,000 for the period 1921-1926, or an increase of 90 per cent. The imports of coffee grew from an average of 899,000,000 pounds to 1,365,000,000 or an increase of 52 per cent for the same two periods. At the average import prices for 1926—2.4 cents per pound for sugar and 22 cents per pound for coffee—the value of this expansion alone amounted to $197,502,000 annually for these two articles. It is clear that the installments on the debt payments were absorbed by the normal expansion in our consumption of tropical foodstuffs.[17]

A much larger variety of raw materials was imported than of foodstuffs, but the two which headed the list may be cited. The imports of rubber grew from an average of 415,000,000 pounds for 1910-1914 to 926,000,000 pounds for 1921-1926 or an increase of 123 per cent, while those of raw silk grew 125 per cent from 24,000,000 to 54,000,000

[16] The following table sets forth the facts:

Merchandise Imports into the United States
(in millions of dollars)

Year	Imports	Increase
1921	2,509	
1922	3,112	603
1923	3,792	680
1924	3,610	182*
1925	4,226	616
1926	4,431	205

* Decrease

[17] The imports of sugar and coffee into the United States were as follows:

	Sugar		Coffee	
Year	Quantity (in millions of pounds)	Value (In millions of dollars)	Quantity (in millions of pounds)	Value (in millions of dollars)
1910-14 (average)	4,384	104	899	101
1921	5,967	235	1,341	143
1922	9,722	252	1,246	161
1923	7,709	380	1,408	191
1924	8,272	363	1,421	249
1925	8,933	246	1,284	286
1926	9,420	233	1,493	323
1921-26 (average)	8,337	285	1,365	225

pounds for the same two periods. At the prevailing import prices for 1926—54 cents per pound for rubber and $6.00 per pound for silk—the expansion alone of these two items amounted respectively to $332,000,000 and $180,000,000. That is to say, between 1914 and 1926 we increased our consumption of rubber and silk sufficiently to absorb more than double the annual installments due on account of the foreign war debts.[18]

Owing to the industrial development of the United States and the difficulties under which Europe labored after the war, the imports of manufactured goods did not expand as rapidly as did those of foodstuffs or raw materials. The importation of a few specialties, such as the finer textiles, certain kinds of chemicals and luxury goods, increased considerably, but not with the some rapidity as did that of tropical foodstuffs and raw materials. In so far as the European countries were liquidating their debts by exports of manufactured commodities they were doing so indirectly, by selling them in other markets from which in turn there were shipped different goods which we were more willing to take.

Thus far the evidence has shown pretty conclusively that any one of the items of services to American traders or tourists or the expansion of imports along certain non-competitive lines was more than sufficient to offset the annual payments on account of the Allied debts, and that these services and imports were absorbed without deranging our industrial organization. But it was equally possible to absorb these payments by a decrease of exports, as well as by an increase of imports. We may, therefore, glance briefly at this other side of the international balance sheet.

The statistics of exports show that between 1921 and 1926 these remained nearly on an even level; in view of the increase of population and national prosperity this stationary character of exports may be regarded as a relative decline. If we distribute them among the three groups of foodstuffs, materials, and manufactures we find that the exports of foodstuffs fell off decidedly, those of manufactures increased

[18] The imports of rubber and silk into the United States were as follows:

	Rubber		Silk	
Year	Quantity (in millions of pounds)	Value (in millions of dollars)	Quantity (in millions of pounds)	Value (in millions of dollars)
1910-14 (average)	106	86	24	77
1921	415	74	45	259
1922	674	102	51	366
1923	692	185	49	392
1924	735	174	51	328
1925	888	430	64	396
1926	926	506	66	393
1921-26 (average)	721	245	54	356

slightly, and those of materials grew considerably.[19] In other words, the economies forced upon the European nations by the payment of their debts resulted in a smaller consumption of American grain and meat. They could not dispense with our raw materials, especially cotton, but they could and did cut down on other things. So far, then, as debt payments were absorbed by a relative shrinkage of our exports, the adverse effects would seem to have been borne primarily by the farmers.

The decline in the exports of foodstuffs from the United States after the war was occasioned in part by the recovery of Europe and in part by increased competition of other producing countries. But the pressure of debt payment to the United States intensified the operation of both of these forces and exerted pressure upon the debtor countries both to curtail their expenditures and to buy in other markets. The agricultural industries in the United States were therefore adversely affected by the continued payments on account of the debt, and their recovery from depression was to that extent delayed.

The manufacturing industries were also affected, although less by the direct export of European manufactures to the United States than by their increased exportation to neutral markets. Whether Europe bought foodstuffs in foreign markets for her own consumption or purchased foodstuffs and raw materials for shipment to the United States made little difference. In either case she had to pay for these goods by her own exports and to that extent lessened the market for American manufactures. In some lines, where the American manufacturers possessed superior advantages of production, these were able to hold their own, but the intensified competition disastrously affected the American producers along particular lines.

An economist of 1984 who reads the discussions of that time cannot but feel surprise at the view, which seems to have been quite generally held, that the payment of the Allied debts to the United States would mean flooding the country with European manufactures, resulting in the destruction of many of our industries, and the lowering of the workers' standard of living. The reason undoubtedly was that these writers fastened their attention on the enormous total instead of direct-

[19] The following table, compiled from the annual reports of the Department of Commerce, gives the exact figures:

Merchandise Exports from the United States
(in millions of dollars)

Year	Foodstuffs	Materials	Manufactures	Total
1921	1,358	1,383	1,626	4,367
1922	1,047	1,419	1,292	3,758
1923	893	1,366	1,478	4,137
1924	947	1,937	1,588	4,472
1925	891	2,084	1,843	4,818
1926	838	1,917	1,956	4,711

ing it to the comparatively small annual payments. A lively debate was also carried on over the effect of the tariff on debt payments: by some it was urged that the tariff must be lowered so as to permit the entrance into the United States of European products, and by others the tariff was proclaimed as the last defense against the flood of cheap goods. It is clear now that the influence of the tariff was greatly exaggerated by both sides. To be sure, the tariff was reduced, beginning in 1929, but the reduction was made to relieve the agricultural interests, and without any reference to debt payments.

There was, however, another aspect of the international payments between the United States and the debtor nations which did not attract so much popular attention, but which was much more important in bringing about a revision of the funding agreements. The United States had become a creditor nation by the year 1917,[20] and a decade later had foreign investments amounting to about $14,000,000,000 in addition to the Allied debts. For the six years 1921-1926 the investment of American capital abroad averaged almost $1,000,000,000 a year,[21] and in the decades which followed the rate of foreign investment was accelerated by the listing of foreign securities on the New York Stock Exchange, the huge borrowings by European governments and private concerns, the recognition of Russia, and the removal of other uncertainties which had hindered the flow of American capital to foreign countries. By 1936 we were a creditor nation to the extent of about $25,000,000,000. From these private investments the interest payments amounted by 1926 to over $500,000,000 a year, and by 1936 they were between $1,000,000,000 and $1,500,000,000. But the curious fact was observable that, as a result of this investment of American capital abroad, the debt payments of foreign governments to the United States were completely absorbed. Indeed we loaned to Europe more than she paid us. There was no net reduction of the European debt, but it was, on the other hand, being increased and at the same time was being transformed from a public to a private debt.

Perhaps this was one of the reasons why the proponents of the revision of the debt settlement urged their reconsideration so soon after the signing of the funding agreements. They undoubtedly realized that a delay would render revision less effective, as private securities took the place of the governmental bonds held by the United States Treasury. There could of course be no question of revising or reducing these private debts, so revision must occur, if it was to take place at all, before the process of transformation had gone too far.

[20] See my *War Costs and their Financing* (Appleton, 1921), p. 76.

[21] Ray Hall, *The Balance of International Payments of the United States in 1926* (Washington, 1927), p. vi. See also *Wall Street Journal*, Dec. 30, 1927.

Looking back on the economic history of the United States after 1922 we can now see that the payment of the annual debt installments, so long as they were made, exercised only a slight influence upon the fiscal and industrial situation. They were only a drop in the overflowing buckets of government finance, of foreign trade, and of national income. Quite different, however, was their effect upon the debtor nations of Europe, which were compelled year after year to transmit to the United States sums which, for the most part small in themselves, bulked large in their smaller economies. Naturally enough, perhaps, most of the discussion in the United States over debt payments was concerned with the effects upon this country, but it is clear now that the effects upon Europe were more important in the long run.

By 1927 there had developed a world economy, which was characterized by a high degree of territorial specialization and international interchange of goods. The industrially developed countries were especially dependent upon foreign markets for the sale of their surplus products and the purchase of needed supplies of foodstuffs and raw materials. To the extent to which the stream of exports from the debtor nations was diverted to the United States, directly or indirectly, for debt payments, to that extent those countries were forced to curtail their purchases. In other words, to state it broadly, the debtor nations were compelled to work harder and export more, to live frugally and to import less both in the form of foodstuffs and manufactured goods.

The pronouncement of the Columbia professors, which applied the law of diminishing utility to the debt payments, was quite correct on this point. "Fulfillment of the debt agreements," said they, "necessarily imposes on European debtors hardships much greater than the benefits that accrue to America. . . . . Payments that could at best mean a paltry gain for most American taxpayers, mean to the overtaxed debtors a crushing load." Even Mr. Mellon seems to have recognized this fact, for, in discussing the debt settlements, he said: "In negotiating the debt settlement with one of the smaller nations, it was shown that the minimum of subsistence in that country, a scale at which the bulk of the peasants are now living, was $31 per man per year. This included no meat, one suit of clothes, and one pair of sandals a year. . . . . Look around the United States and note the improvement in general prosperity through the increase in our own capacity to buy."[22] In a word, dollars of great utility were paid by poorer countries to a rich country where their utility was much less.

[22] Speech before the Union League Club at Philadelphia on March 24, 1926. *Treasury Report*, 1926, p. 259.

As an argument for revision of the funding agreements and their determination upon some other principle than that of "capacity to pay" the application of the law of diminishing utility made an economic appeal; but this was opposed by the Secretary of the Treasury as opening wide the door to debt cancellation, if not repudiation. It is clear that this was not its intent. The purpose was rather to envisage the problem of debt payment as a world problem, with far-reaching ramifications, whose effects were not limited even to the debtor and creditor countries, but were felt throughout the existing world economy. This was not a new thought. It lay at the basis of the Balfour note and it found clear expression in a statement by Mr. Mellon himself before the Ways and Means Committee on January 4, 1926, when he said: "The entire foreign debt is not worth as much to the American people in dollars and cents as a prosperous Europe as a customer."[23] Unfortunately much of the discussion of this problem proceeded from the point of view of the individual manufacturer or exporter or other producer, who thought he saw his own interests menaced by debt payments, rather than from a national or international standpoint.

This confusion of points of view was well illustrated by the discussion of the German reparation payments in connection with the Allied debts payments to the United States. In making the funding agreements with the debtor nations the American World War Foreign Debt Commission insisted that the payment of reparation should not be linked with the debt payments to us, and eliminated from the funding agreement with France her proposal for a "safeguard clause," which would have made France's payments to the United States contingent upon her receipt of reparations from Germany.[24] Yet, in his letter to President Hibben, Mr. Mellon reproved the professors for not taking into account the reparation payments when estimating the burdens on friendly countries, and himself pointed out that the payments of the major debtors to the United States would be offset by the reparation payments which they would receive.[25] It is obvious that, if the effects of debt payment operated disadvantageously in the case of the several countries, they were much greater in the case of Germany upon whom alone all the payments were concentrated. Of course, the correct viewpoint from which to estimate those effects, which how-

[23] *Treasury Report*, 1926, p. 213.

[24] Report of Ways and Means Committee on Debt Settlement with France. Ho. Rep. No. 1338, 69th Cong., 1st sess.

[25] "It is obvious that your statement that the debt agreements which we have made impose a tremendous burden of taxation for the next two generations on friendly countries, is not accurate, since the sums paid us will not come from taxation, but will be more than met by the payments to be exacted from Germany."—Letter of A. W. Mellon to John Grier Hibben, March 15, 1927.

ever was often forgotten at that time, was that of a world economy in which each of these countries was a component part. An injury to one hurts all the others, though in varying degrees. Since the United States was so nearly self-sufficing, its relationship with other countries was less intimate and close than that of the other countries to each other, and by some of the politicians of the times its very existence was denied. Knowing, as we now do, that the payment of German reparations was ended a few years later by the composition of the annual installments into a lump sum, one cannot help but wonder that these should have been counted upon so confidently when estimating the future capacity of the debtor nations to pay the United States. Or was the refusal on the part of the then Secretary of the Treasury to admit the safeguard clause into the French funding agreement a recognition on his part of the fact that France would probably not long continue to enjoy these revenues?

But such speculation as to motives is idle. It is difficult to determine at this late date what reasons finally led the people of the United States to revise the funding agreements and to accept a comparatively small sum in final settlement of the foreign debts. The economic effects, so far as these can be traced, were not sufficiently harmful to have called forth any popular movement. Upon the debtor countries the effects were much more serious, but the movement for revision did not originate among them. The moving force for revision seems to have been ethical, an appeal to the justice of the American people even though it seemed to run counter to their immediate financial interests. Reinforced as it was by internal political changes and by the development of a new foreign policy designed to establish more cordial international relations, the pressure for revision finally became irresistible. But in endeavoring to give a historical explanation of this remarkable movement the influence of the university professors must not be overlooked.

REVISION OF THE EUROPEAN DEBT SETTLEMENTS—DISCUSSION

E. M. PATTERSON.—There are two ways of approaching this question. One is by an appeal to historical, legal, sentimental, and certain long-run economic considerations, the method that has been followed in the two papers preceding this. The other is to examine the drift of events which may conceivably have much to do with settling the argument. It is possible that the matter may be taken out of our hands, so to speak, and that new adjustments may occur while we are still debating.

It will be remembered that in May, 1921, the claims against Germany were finally set at some 132 milliards of gold marks, including A, B and C bonds. and that attempts were made to collect 5 per cent interest plus 1 per cent sinking fund charges on the A and B bonds or a total of three milliards of marks per year. Against this effort disinterested economists everywhere protested. The Ruhr invasion and the collapse of Germany bear witness to the folly of demanding the impossible. Today the discussion rages around the possibility of collecting only 2.5 milliards per year which is a 6 per cent return on only 41,666,000,000 marks, or less than one-third of the 1921 total and less even than the combined A and B bonds. Also Mr. Gilbert, Agent General for Reparation Payments, is insisting that the uncertainty regarding the aggregate amount of Germany's obligations should be cleared up. To date the revisionists have clearly had the better of the German reparations argument.

The debts due to the American government were carried late in 1922 at $11,524,000,000. Interest at 5 per cent plus say 1 per cent sinking fund charges would have meant payments of nearly $700,000,000 per year. The settlements actually made call for only about 30 per cent of this at present or slightly over $200,000,000 per year with a little more than $400,000,000 or 60 per cent in later years. Again the revisionists seem to have won the argument.

At present there is demand for further reductions and once more those who plead for them are called impractical. In 1921 and 1922 the signs of a breakdown were pointed out by many students although denied by those who thought that debts were debts and should be paid. Today there is no disagreement regarding the adjustments already made but there is an almost violent condemnation of those who ask for anything further. Are the signs of strain as clear as those of five years ago?

Perhaps not but there are unmistakable grounds for concern, serious enough to warrant belief that a critical situation is developing that may compel liquidation.

Reparation payments have been made punctually to date by the German government and deposited in the Reichsbank and external remittances in cash and in kind have been made by the Agent General. But two facts must be noted. One is that the foreign exchange used in making payments has originated from foreign loans rather than from a surplus of German exported goods or services. The other is that the single important period

during which German foreign borrowing was checked brought acute strain. Last winter interest rates were lowered in Germany and foreign loans were discouraged. Both German and foreign funds started out of Germany; in five months the Reichsbank had lost a milliard marks of foreign exchange, and under the influence of the low money rates the Berlin stock market got out of control. The discount rate was raised in June and again in October and foreign borrowing was resumed. The German economy is clearly not yet in a position to make real external payments and borrowing continues.

European governments as debtors of our government are remitting regularly what they owe. But we find that these payments too are, in the aggregate, being met with exchange originating from loans floated in the United States. Also it is clear that any check on this movement would bring acute strain. The disorganization of the first half of last year (1926) seems to make this clear. Funds were flowing into France with such rapidity as to make a further rise in the franc hard to check. Gold left London in such quantities as to cause alarm. Recourse was finally made to the device of lowering discount rates in the United States and the strain on London was relieved.

At present many of the European exchanges are at a premium in New York and funds are flowing abroad. Even gold is moving in considerable quantities. But it is a financial rather than an economic movement. European exchange is not being purchased here to pay for an excess importation of foreign goods and services. The important European merchandise balances are still seriously adverse except where, as in France, an export surplus has come about through a decline in imports rather than through an increase of exports. Even the balance of payments where known seems to be unfavorable.

There are gains in Europe but they are slow. At present the coal markets are clogged, iron and steel are weak, and in many countries textiles are depressed. Several countries have raised money rates during the year and one or two others would probably do so were it not that they fear the effects on business. Unemployment is at present increasing in Germany, France, Italy, and England. But funds are going out of the United States because money rates in the United States are lower than those abroad. Such a trend apparently cannot continue indefinitely.

Similar though not identical statements were made five years ago but nothing was done until the breakdown of reparation payments in 1923. Probably nothing will be done now. Instead it is argued, e.g., by Mr. Auld in his recent volume *The Dawes Plan and the New Economics*, that funds are moving in response to the European demand for capital and that when this demand is adequately met interest rates abroad will fall and a reverse movement occur. In the meantime alarm over transfer difficulties is alleged to be premature or even trivial.

This optimistic view may be contrasted with the views of Sir George Paish who contends that the world is drifting toward a gigantic financial crisis whose dimensions and consequences will exceed anything ever known. He believes that debts in Europe are being met only by the contraction of new

obligations, that loans are being piled upon loans. He contends that bankers and statesmen are helpless and are merely hoping against hope that something will turn up. Recently he has stated that this drift cannot continue longer than until the spring of 1929. By that time, if not sooner, there will come a general realization of the impossible size of the combined public and private debts and the defaults will start. For America he anticipates a sharp curtailment of exports with an industrial collapse. This he contends will be accompanied by a huge amount of unemployment and the usual distress.

Sir George may be too pessimistic but it will not do for us to dismiss him too abruptly. There is such a thing as the accumulation of debts on too huge a scale and financial crises may and have occurred. Against his view may be placed the other one already given, that American funds are moving to Europe because of the higher rates there and that these interest rates in Europe are high because of a shortage of capital there as contrasted with an abundance in the United States. This movement of capital, it is argued, will add to the productivity of Europe. After a time the present need for capital will decline and interest rates will fall. The output of goods in Europe will have been greatly enlarged and the present import balances can be changed to exports. Thus the movement will be reversed by the simple and natural processes of business.

Five years ago the difficulties came to a head and readjustments of debts were arranged because payment was dependent (1) on the willingness and the capacity of the debtor countries to pay, (2) on the willingness and capacity of the creditor countries to receive, and (3) on the passage of time during which certain necessary economic adjustments could take place. All of these essentials were lacking. Willingness and capacity on both sides may still not be sufficient for the size of the aggregate problem and many of the adjustments for which time is needed probably have not yet occurred. For example, we in the United States are apparently not yet ready to take huge sums in the form of goods and services. Witness our insistence on heavy exports, on an American merchant marine and on a continued high tariff. Without passing judgment on any of these policies by itself we can notice their inconsistency.

It may be argued that in practice foreign loans are not collected—that the investments abroad merely remain abroad. This has usually been true but there have been times when they have been heavily written down, when defaults have occurred, when large losses have been taken. Then, too, the American investor is not yet used to foreign securities and may easily take fright. Last spring certain foreign issues were for a long time undistributed. Mr. Gilbert's recent note to the German government distinctly weakened the foreign bond market. It is this possible refusal of the American investor to buy an indefinitely large amount of foreign securities that worries the pessimist.

The facts to date are not reassuring but are a cause for concern. Moreover many of the loans made to Europe have not been used in a productive manner but have added to debt burdens without any corresponding increase in

productive capacity. Besides Europe is an old rather than a new area and an appreciable addition to her annual productivity is needed merely to care for the growth in population. We have very little experience to teach us whether so highly developed a part of the world may safely borrow large amounts abroad.

If it be assumed that the aggregate debt burdens are at present too great and that there is a limit to the amount of foreign security issues that may be floated in the United States market, what is the effect on the public debts? For Germany it has raised the issue of the priority of reparation payments over private debts, a question of extreme importance. If reparation claims in law and in practice are to have a prior claim on the German economy, if Mr. Gilbert is to have foreign exchange for his remittances regardless of the needs of others, then importers of food and raw materials may find it impossible to meet their obligations while German cities, states, and private corporations may be compelled to default because there will not be enough pounds and dollars in the market for everybody. If such difficulties as these arise, outstanding German bond issues will decline in value and new ones cannot be sold. The economic life of Germany will suffer if food and raw materials are not regularly received. Very quickly reparation payments will be imperiled.

The other alternative is the more probable. Mr. Gilbert's demand for exchange must be met last and for two reasons. One is that he is enjoined not to weaken the mark. The second is that a shortage of exchange for the other claimants will quickly weaken the German economy and check reparation payments. If there is any shortage the Agent General must do without. Receipts on reparation account may pile up in the Reichsbank but cannot be remitted. There must be a heavy excess of exported goods and services to furnish the exchange or else further loans must be floated to provide it. How long the borrowing can go on no one can say. There is a considerable probability that it may be easily checked and if this occurs soon the crisis may be acute.

For the debts due the United States government the problem is a similar one. The aggregate amount must be reduced and sooner or later a formula for it must be found. It is highly probable that here the losses will be shared. Doubtless some of our private investments have been unwise and defaults will occur. Rather than suffer too heavy losses on these private issues, however, pressure will come for a reduction in the public debts and they will be scaled down.

Unfortunately such adjustments are not easy to make. Liquidations can not occur without a strain. Both reparations and the debts to our government must ultimately give way in whole or in part. To the extent that they do not yield private investors will suffer. They will probably lose much in any case.

Fred R. Fairchild.—Inasmuch as we are dealing with a highly controversial subject, it is a bit surprising, I think, to find so little of controversy among the speakers who have thus far addressed you. Mr. Andrew has,

indeed, presented his case with great vigor, but his lusty blows have landed on no opponent on the platform, since there is no such, and, if I may judge from your reception of his address, I should say that he has few if any opponents in the audience. Professor Bogart has, with rare discretion, hastened to withdraw himself from the atmosphere of prejudice by resort to his magic carpet, transporting himself into the far reaches of the later Twentieth Century, from which safe position the events of the past ten years become sufficiently remote to fall within the focus of his historian's vision. And Professor Patterson ranges himself on the side of the majority. A debate in which all the debaters are on the same side of the question is lacking in a certain element of interest. It is therefore with great regret, Mr. Chairman, that I have to announce myself unable to correct this unfortunate situation.

Under these circumstances I think that the best I can do is to take advantage of my position as the last of the formally announced speakers to undertake a summing up of the history of this controversy and an appraisal of the present situation. The public discussion has been carried on with no little heat and some bitterness, and there have been stoutly contested issues which may now be recognized as of trifling importance. I choose to ignore all such and to invite your attention to what I consider the fundamental features of the present issue.

First: The loans made to our allies were bona fide loans, of full legality, negotiated with entire understanding by both parties. I fail to find any evidence to indicate that any one concerned at the time thought that these loans did not give the United States rights which she could later assert without laying herself open to the charge of bad faith or undue harshness. Everyone engaged in the controversy has either asserted or admitted the legality of the claims of the United States, though some of the latter seem, in the heat of the controversy, to have lost sight of its full import.

Second: The original demand loans have now all been funded by agreements following negotiations with the respective debtors (barring the fact that the French agreement has not yet been ratified).

Third: By the terms of the agreements the United States has given up a considerable part of her claims, varying, as calculated on a 4¼ per cent basis by the Debt Funding Commission, from about 20 per cent for Great Britain and six other nations to 53 per cent for France and Belgium, 70 per cent for Yugoslavia, and 75 per cent for Italy.

Fourth: Though the debts have been thus funded, at considerably less than their full value, and the Debt Funding Commission has wound up its affairs and ceased to exist, the result has not been accepted as a satisfactory settlement either in Europe or in America. It would be wholly unprofitable, I think, to rehearse the arguments which have been indulged in either in attack upon or defense of the work of the Debt Funding Commission. I feel inclined only to observe in passing that it seems to me that the attackers have at times been unjustifiably severe in their strictures upon the Funding Commission and the Treasury. However, all this is of no present moment. The essential thing is that the agreements are not being accepted,

here in America, as a satisfactory or final settlement. The Columbia professors demand a revision; the Princeton faculty says "amen"; many influential persons have expressed themselves to the same effect. All of the speakers tonight agree. Scarcely a voice, outside of official circles, is heard on the other side. Thus, the chief point at issue, whether a revision of the debt settlement is required, appears not to be an issue among us here. I shall not spend any of my time, therefore, in arguing this point.

Fifth: Continuing my summary of facts now definitely determined; the amount of the total annual payments due the United States under the funding agreements (increasing gradually from about two hundred million dollars per year in the first decade to something over four hundred millions in the later years of the sixty-two year period) is relatively small when considered in relation to the foreign trade or the public revenue of the United States. These payments are not large enough to have any great effect upon the tax burden of the American people or upon the direction of American industry or trade. There has in the past been great misunderstanding on this point, and some wild exaggeration and unreasonable fears. This matter has been fully considered by Moulton and Pasvolsky, by Professor Taussig, Professor Angell, and others, and now by Professor Bogart in the paper to which we have just listened.

So much for the facts of the case. Shall we now ask: What is wrong with the debt agreements?

We have heard much of the principle of "capacity to pay." Of course this principle, as applied by the Funding Commission, was unworkable. Hear what the Secretary of the Treasury himself says in his Report for 1925 (page 53):

"Nor does the principle of capacity to pay require the foreign debtor to pay to the full limit of its present or future capacity. It must be permitted to preserve and improve its finances and currency on a sound basis, and to maintain and, if possible, to improve the standard of living of its citizens. . . . . And in examining the capacity of payment, the commission looks not only at the immediate capacity, but estimates so far as it is able to do so, the future development of the nation concerned."

Here is a fine statement of an ideal. But obviously it is an ideal impossible of attainment approaching anything closer than careful guesswork. However, this I consider no longer an issue of primary importance.

The real faults of the agreements (brushing aside trivialities and extremes of prejudice) are I believe embraced in two features. First, the long period of payment. It seems to me absolutely intolerable that fifty and sixty years from now, when few persons living will have had any part in the war, when the parliaments and governments and finance ministers will know of the war only as a record of history long past, the nations of Europe shall still be paying tribute (for so it will certainly be regarded by that time) to the rich and powerful United States, assuming that this nation still is rich and powerful. This picture of itself is revolting, to say nothing of the disastrous consequences which our imagination can easily picture

taking place long before the final payment falls due. I cannot feel that further argument is needed on this point.

The second indictment against the agreements is directed to the gross inequality of the treatment of our several debtors. More than 80 per cent to be collected from Great Britain; less than 50 per cent from Belgium and France; and 25 per cent from Italy. Here we possibly enter upon more debatable ground.

Upon the basis of capacity to pay, it must be admitted that the Funding Commission could have arrived at no result except inequality, since capacity is obviously unequal. But the utter impossibility of any exact measure of capacity to pay should, it seems to me, be sufficient to shake our confidence in any such results as have been reached. Do the ratios really represent the respective capacities of Great Britain, France, and Italy? Have we not, possibly, taken advantage of the traditional British spirit of financial integrity and national pride? I am afraid we have. I am not satisfied by the appeal to the ordinary commercial rule, by which the creditor, when unable to collect in full, collects all he can from each debtor. The Funding Commission itself does not admit that it applied the principle of capacity to pay in any such extreme sense as this. On the contrary it asserts a much milder interpretation. Then the commercial rule has not been followed in the case of Italy, France, Belgium, and some others. In the case of England and half a dozen others it has been closely approached. I believe that this glaring inequality will continue to rankle in the hearts of our European friends and continue to be a source of humiliation to ourselves, increasing in strength, so long as such inequality continues.

If now we are satisfied that the present agreements are not satisfactory and must be revised, what do we propose to do about it? Here, I confess to some disappointment in view of the evident hesitation to offer constructive suggestions. The Columbia professors said they did not urge complete cancellation, only revision. The Princeton faculty merely echoes the words from Columbia. Professor Bogart, from the safe isolation of his stand in the year of our Lord 1984, observes only that the debts have, as a matter of ancient history, been compounded for moderate lump sum payments, from which we may, I suppose, infer that he favors such change in the present year of Grace, 1927. But he goes no farther than this. Mr. Andrew is outspoken and aggressive in his denunciation of what has been done, but conspicuously silent as to what should be done.

I am fully aware that discretion would dictate that I follow the same safe and sane course. And yet I feel the urge of an insidious temptation to play the rôle of the fool in the drama, "Fools rush in where angels fear to tread," and to offer some humble suggestions, even though they should threaten disturbance to our present happy state of agreement.

There are doubtless those who believe that the debts should be canceled in full without further ado. I cannot agree. There is obviously not time here to argue this point. I can only say that in my opinion all the facts in the case point, not to complete cancellation, but to a reasonable and decent collection of what can be so collected.

With this as the starting point, I return to consideration of the two chief defects of the present agreements. The long term of payment is to be corrected only by substituting a definite lump sum payment to be made once for all within a comparatively short time—say four or five years, the quicker the better—so that the whole matter can be settled by statesmen still concerned with problems of the war and appreciated by the generation that took part in the war. Let us have it settled and over with. This would involve a fundamental principle exactly the reverse of that which the Funding Commission laid down for its guidance. To them the principal sum was to be inviolate; capacity to pay was to be respected by reduction of the interest rate and extension of the period of payment. Would we not better start with a fixed brief time of payment and make adjustment to capacity frankly by scaling down the principal? Only thus can the books be closed now.

Of course the principal sum so determined for each debtor would not need to be limited to that which could be raised out of annual revenue, as is implied in the Funding Commission's formula. We are now talking in terms of capital, and we should have regard to the sums which our debtors could quickly raise, chiefly by loans in the market. That these nations could float such loans is evident from the large volume of private loans already floated since the war, probably ten billion dollars by now. Let the nations deliver their payments to the United States and then pay their own loans at their leisure. Thus the whole matter passes from public to private investment, and the inter-governmental situation ends. This is what Germany did after the Franco-Prussian war. A huge indemnity was imposed upon France and collected within a few months. That ended the relations between France and Germany. France was left to handle her domestic debt as she chose. She has been paying interest on it ever since, but that has been no concern of Germany's. Fears that such financial operations would disorganize the domestic and international investment markets are, I believe, answered by the rate at which private investments in European securities have proceeded since the war and are still proceeding.

What of the amount at which the knockdown debt obligations shall be set? This question may be combined with the second difficulty of the present arrangement, i.e., the unequal treatment of the debtors. Here, I think, we may not avoid recourse to the rule of capacity to pay. But the problem becomes much simpler, since we shall be dealing with conditions of the present and immediate future only, not of the remote future. The most serious question is as to the separate treatment of the several debtors. If we do not like inequality, what do we propose? The Secretary of the Treasury has put this question to his critics. He was indeed so rude as to propound a dilemma, and, be it noted, not the familiar, domesticated, two-horned dilemma, but a strange and horrid monster with three horns. Will you, says he, fix the scale of payment in accordance with the capacity of Great Britain, thereby imposing an utterly ruinous load upon Italy, France, Belgium, and others? Or do you choose to collect upon a 50 per cent basis, treating Great Britain with moderation while still imposing ruin on others? Or finally will

you have Italy set the standard, thus letting England and most of the others off with payments representing only an insignificant part of what they could perfectly well bear?

I have noted no great alacrity to step up and face the Secretary's three-horned dilemma. Personally I should not fear to advance bodly upon his third horn, making the ratio of cancellation that which could be borne by the least able of the chief debtors (leaving room for possible exceptional treatment of certain small and impecunious nations). This would mean of course a very substantial cut, probably approaching much nearer to complete cancellation than to full payment, but I should accept it nevertheless. If such settlement appeared to be an easy let-down for Great Britain, I should have on that account no regret, letting my mind rest upon the stupendous financial burden which she has borne, without which the war would have been lost long before we entered.

There is one point that has been raised by Professor Taussig, and which I think has not received the attention it deserves. The price level today is barely three-fourths what it was when these loans were contracted. We all know the effect upon debtors and creditors of a falling price level. It would seem that the United States, whatever else the decision may be, should forego any fortuitous gain from this cause. This would justify a 25 per cent cut in all the debts at the outset.

Finally, if my analysis has been correct, we need no international conference to settle this problem. We are the creditors, secure in our strictly legal rights. The motion for cancellation of part of the debt should come from us, as an act of generosity to necessitous debtors, our late allies in war. The determination of the amount of the cut might possibly require some further conference with certain of the least capable nations. But that is all. Nor do I mean to imply that our decision should take no account of the question of the German reparation payments. That, like any other pertinent consideration, will have to be given due weight. But responsibility for the settlement of the claims against our allied debtors rests squarely upon the United States and may not be shared with others.

MINUTES OF THE BUSINESS MEETINGS OF THE AMERICAN ECONOMIC ASSOCIATION HELD AT WASHINGTON, D.C., DECEMBER 27-30, 1927

The first business meeting of the American Economic Association was held at Hotel Washington, Washington, D.C., December 28, 1927, at 9:30 A.M., with President Adams presiding.

The minutes of the December 31, 1926, meeting were approved as printed in the proceedings of the Thirty-ninth Annual Meeting, p. 177.

The following reports were read an adopted:

(1) The Secretary,[1] by Mr. Deibler.

(2) The Treasurer,[2] by Mr. Deibler.

(3) The Auditing Committee,[3] by Mr. Deibler for Paul L. Morrison, Chairman.

(4) The Managing Editor,[4] by Mr. Dewey.

(5) The Finance Committee,[5] by Mr. Deibler, for Mr. C. H. Crennan, Chairman.

President Adams appointed Professors Benjamin H. Hibbard, D. O. Kinsman and A. C. Cance, a Committee on Resolutions.

Adjourned

The second business meeting of the American Economic Association was held at Hotel Washington, Washington, D.C., December 30, 1927, at 9:30 A.M., with President Adams presiding.

The minutes of the meeting of December 28, 1927, were read and approved.

The following reports were read and approved:

(1) The Joint Census Advisory Committee,[6] by Mr. Deibler, for Mr. Rossiter, Chairman.

(2) Representatives of the Social Science Research Council,[7] by Mr. Secrist.

(3) The Representatives of the American Council of Learned Societies,[8] submitted for Professor Willcox.

(4) The *Encyclopædia of the Social Sciences*,[9] submitted for Mr. Seligman.

Voted: That the Secretary be authorized to print in whole or in part the above reports.

Voted: That the Secretary be instructed to prepare and forward to Professor Seligman a congratulatory letter expressing the appreciation of the

[1] See page 271.
[2] See page 276.
[3] See page 277.
[4] See page 284.
[5] See page 283.
[6] See page 286.
[7] See page 289.
[8] See page 289.
[9] See page 291.

Association for his enthusiasm and untiring efforts in carrying forward single-handed the task of making the *Encyclopædia of the Social Sciences* a reality.

(5) Committee on Periodical Abstracts,[10] by Mr. Dewey.

Voted: That the question of time and place for the next annual meeting be referred to the Executive Committee with power.

Dr. Richard T. Ely announced that the Committee in charge of the preparation of the *Festschrift* in honor of Professor John Bates Clark would make the formal presentation of the volume to Professor Clark, January 2, 1928.[11]

Professor Commons reported for the Nominating Committee the following list:

For President: Fred Manville Taylor, University of Michigan.

For Vice-Presidents: Frank LeRond McVey, President of the University of Kentucky, and Jessica Blanche Peixotto, University of California.

For Secretary-Treasurer: Frederick S. Deibler, Northwestern University.

For members of the Executive Committee: William H. Kiekhofer, University of Wisconsin, and Edmund E. Day, University of Michigan.

For Managing Editor: Davis R. Dewey, Massachusetts Institute of Technology, for a term of three years.

For members of the Editorial Board: Edwin G. Nourse, Institute of Economics, and John M. Clark, Columbia University.

For the Social Science Research Council: George E. Barnett, Johns Hopkins University, and Leon C. Marshall, University of Chicago, to fill the unexpired term of W. W. Stewart, resigned.

For the Program Committee: Matthew B. Hammond, Ohio State University.

There being no additional nominations, the above nominees were unanimously elected.

Professor B. H. Hibbard reported for the Committee on Resolutions as follows:

Inasmuch as the managers of the Hotel Washington have shown unusual courtesy and provided ample accommodations and services in connection with every phase of the meetings, the American Economic Association hereby wishes to extend to them its cordial appreciation.

The Association is deeply indebted to the American Council of Learned Societies for assuming the expense of maintaining a joint press bureau, thus relieving the officers of this task, and to its Permanent Secretary, Dr. Waldo G. Leland, who not only supervised this work but assumed the responsibility of compiling and publishing the joint program of all the social science associations in session in Washington at this time. The Association wishes to express to the Council and to Dr. Leland personally, its sincere appreciation of these services.

[10] See page 289.
[11] See report of the Committee, page 295.

In appreciation of the painstaking and efficient work of Professor Harold G. Moulton and his committee in making plans and providing facilities for the comfort, convenience, and pleasure of the members of the American Economic Association, their wives and guests, in attendance at the Fortieth Annual Meeting, we hereby extend to them our very cordial vote of thanks.

(Signed) B. H. HIBBARD
D. O. KINSMAN
A. C. CANCE

There being no further business the meeting adjourned.

Minutes of the First Meeting of the 1928 Executive Committee, Hotel Washington, Washington, D.C., December 30, 1927.

The first meeting of the Executive Committee of the American Economic Association for the year 1928 was held in Hotel Washington, December 30, 1927, at 1:00 P.M. There were present: Ex-President Adams, presiding, and Messrs. Day, Deibler, Dewey, Kemmerer, Kiekhofer, and Ruggles.

Voted: To appoint Professor George E. Barnett to the Joint Census Advisory Committee in place of Allyn A. Young, whose term expired December, 1927.

Voted: To appoint Edward A. Harriman, Washington, D.C., as counsel for the year 1928.

Voted: To appoint David Friday as representative of the American Economic Association on the National Bureau of Economic Research.

Voted: To authorize the Secretary to publish the Handbook during the year 1928, and to fix the price at $2.00 per volume.

Voted: To instruct the Secretary to consult with Professor Meeker and Mr. Ethelbert Stewart, U. S. Commissioner of Labor Statistics, as to the purport of Professor Meeker's resolution calling for a new survey of the cost of living, and to lay the facts found before the Executive Committee at its next meeting.

Voted: To refer to next meeting of the Executive Committee the request of the Bureau of Research and Education of the International Advertising Association for the appointment of a committee of three to serve on an Advisory Board of the said Bureau of Research.

Adjourned.

REPORT OF THE SECRETARY OF THE AMERICAN ECONOMIC ASSOCIATION FOR THE PERIOD ENDING DECEMBER 10, 1927

In order that the work of the Association may be recorded fully, I am including in this report the minutes of all meetings of the Executive Committee held during the year, as follows:

(1) Minutes of the First Meeting of the 1927 Executive Committee.

The first meeting of the Executive Committee was held in the Century Club, New York City, at 10:30 A.M., March 12, 1927. There were present: President Adams, presiding, and Messrs. Day, Deibler, Dewey, Dixon, Ely, Fairchild, Kiekhofer, Lewisohn Mitchell, and Ruggles.

The minutes of the meeting of December 29, 1926, were read and approved.

Professor Dewey reported on the request of the sub-committee on Economic Bibliography of the International Institute of Intellectual Co-operation. Dr. Chester Lloyd Jones had represented the American Economic Association at the meeting of the sub-committee on Economic Bibliography, held in Paris, January 24-26, 1927. At previous meetings of this committee the literature had been divided among various national groups for the purpose of preparing the bibliographical material for the proposed project.

The request was that the American Economic Association, in co-operation with the Social Science Research Council, should undertake the preparation of bibliographies of all publications appearing in the United States.

Voted: That President Adams be instructed to communicate with the International Committee on Economic Bibliography, expressing the sympathetic interest of the American Economic Association in the project of the said committee, and stating the active work now being done under the auspices of the Social Science Research Council, looking toward the development of a feasible plan for preparing abstract and bibliographical material for the Social Science literature appearing in this country.

Voted: To request Professor Dewey to keep in touch with the project of this committee, as well as the work of the Committee of the Social Science Research Council, and to report at the next annual meeting.

Voted: That the question of preparing the bibliographical material requested by the International Committee on Economic Bibliography be referred to Professor Dewey with power, and that the sum of two hundred dollars be appropriated for the purpose of defraying the expenses of a survey of this project, if Professor Dewey finds such survey necessary or desirable.

Voted: That the Secretary prepare and forward to Dr. Chester Lloyd Jones the formal thanks of the Executive Committee for his services in representing the American Economic Association at the meeting of the Committee on Economic Bibliography, recently held in Paris.

In the case of the *Encyclopædia of Social Sciences*. Professor Seligman reported that the project had been financially underwritten. The problem was now one of negotiating a publishing contract and organizing an editorial staff.

Voted: That the President be authorized to fill the vacancy caused by the resignation of Professor Seligman on the committee having this project in charge.

Voted: To authorize the President to appoint a committee to take under advisement and to report at the next annual meeting on the proposal submitted by Professor Max Handman in respect to the appointment of a committee to co-operate with the American Historical Association in translating important documentary and source material pertaining to European economic history, provided this project reaches a practical stage.

Voted: That Professor Bela Földes of Budapest and Professor A. Graziani of Naples be granted complimentary copies of the publications of the American Economic Association, and that the Committee on Honorary Members be instructed to consider the desirability of electing further members within the limits now prescribed.

Voted: To refer the request of the Institute of International Finance to the President, Editor, and Secretary for report at the next annual meeting.

Voted: That the Secretary be instructed to express to Professor Bogart of the University of Illinois the appreciation of the Executive Committee for the suggestion concerning plans for the preparation of the annual program. Since it was too late to experiment with the plan for the current year it was suggested that the proposal be taken up at the annual meeting.

Voted: To refer the request of the Stable Money Association for a joint meeting to President Adams, with power.

Voted: That the special committee in charge of the publication of the Clark memorial volume be authorized to enter into a contract with some publishing firm, providing the contract commits the Association in a sum not to exceed $3000.

Voted: That the Secretary prepare appropriate announcement of this volume, offering it to the membership of the Association at a reduced rate, and that arrangements be negotiated whereby the members of the Royal Economic Society may order the volume on similar terms.

Voted: To authorize the Managing Editor to publish the account of the dinner given in honor of Professor J. B. Clark's eightieth birthday as a supplement of the REVIEW.

Voted: The President and Secretary be instructed to bring up the question of holding the annual meetings in alternate years in Chicago and New York or Washington at the next annual meeting.

Voted: To hold the next annual meeting in Washington, December 27-30.

Voted: That the selection of a chairman of the Committee on Local Arrangements be left to the President and Secretary.

Adjourned.

(2) Minutes of the Second Meeting of the Executive Committee, Hotel Washington, December 28, 1927.

The second meeting of the Executive Committee of the American Economic Association was held at Hotel Washington, December 28, 1927, at 8:30 A.M. There were present: President Adams, presiding, and Messrs. Day, Deibler, Dewey, Dowrie, Ely, Fairchild, Kiekhofer, Lewisohn, Mitchell, and Ruggles.

Voted: To lay on the table the request of the Institute of International Finance for the appointment of a representative of the American Economic Association to serve on the Executive Board of that organization.

Voted: That the proposal of Professor Bogart calling for the adoption of the policy of requesting the submission of papers by the membership as a means of making up a part of the program be referred to the Program Committee with power.

Voted: That the proposal to hold the annual meetings in alternate years in Chicago and Washington or New York be laid on the table.

Voted: To refer the question of securing a new publisher to the Managing Editor and Secretary with power.

Voted: To approve the proposal of the Social Science Research Council for the appointment of three members of the American Economic Association to act as representatives on an Advisory Committee to aid in launching the new *Abstract Journal of Social Sciences*.

The following persons were appointed to represent the Association on this Committee: M. B. Hammond, Ohio State University, C. C. Williamson, Columbia University, Z. C. Dickinson, University of Michigan.

Adjourned.

(3) Minutes of the Third Meeting of the Executive Committee, Hotel Washington, December 30, 1927.

The third meeting of the Executive Committee of the American Economic Association was held at Hotel Washington, December 30, 1927, at 8:30 A.M. There were present: President Adams, presiding, and Messrs. Day, Deibler, Dewey, Dowrie, Ely, Fairchild, Kemmerer, Keikhofer, Mitchell, and Ruggles.

Voted: To authorize the exchange of publications with the Economic Section of the Russian Association of Research.

Voted: That action on the other items requested in the communications from the Economic Section of the Russian Association of Research be delayed until additional information was presented.

Voted: To approve the proposal by which the Royal Economic Society and the American Economic Association mutually arrange to circularize the members of the respective associations for the purpose of soliciting memberships.

Voted: To authorize the Secretary to take up with the Adelphi Company the possibility of an arrangement by which noteworthy translations or reprints might be offered to the members of the Association at reduced rates, and to bring in a definite plan for action at a later date.

Voted: That legal advice be sought in the respective states in which business of the Association is now being transacted, to make sure that the Association is complying with the laws of these states.

Voted: That the officers of the American Association for the Advancement of Science be informed that the Executive Committee of the American Economic Association is of the opinion that a joint meeting between the two Associations would be inexpedient on account of the size of the two organizations and their allied associations.

Voted: To leave the request of the Bureau of Information of Gujranwala, India, for copies of the publications of the American Economic Association to the discretion of the Managing Editor.

Voted: To appoint Clive Day, of Yale University, as representative of the American Economic Association on the *Encyclopædia of Social Sciences* in place of Edwin Gay, who had become one of the advisory editors of this work.

Voted: That the expenses of the representatives of the Association incurred in connection with the conferences concerning the development of the *Encyclopædia* be defrayed by the Association.

Voted: That beginning January 1, 1928, copies of all publications of the American Economic Association be filed with the Permanent Secretary of the American Council of Learned Societies.

Voted: That a committee of three be appointed to co-operate with the Committee of the Social Science Research Council that is engaged in compiling a volume on scientific method in the social sciences.

The following persons were named on this Committee: John R. Commons, University of Wisconsin, Edmund E. Day, University of Michigan, Frank H. Knight, University of Chicago.

Voted: That a committee of three be appointed to co-operate with the American Association of Collegiate Schools of Business in the endeavor to collect and publish information concerning important research projects that were being carried on by various persons and agencies throughout the country.

The following persons were named on this committee: Professors L. C. Marshall, University of Chicago, H. G. Moulton, Institute of Economics, and Henry R. Hatfield, University of California.

Adjourned.

In addition to the regular meetings, the following business was transacted by correspondence:

Approval of:

(a) The expenses involved in connection with the circularization of the membership of the Association in reference to the *Encyclopædia of the Social Sciences.*

(b) A proposal by the Adelphi Company by which copies of a reprinted edition of Tooke and Newmarch's *History of Prices* will be offered to members of the Association at a 20 per cent discount from the list price.

Under authorization of the Executive Committee the President and Secretary has granted the Social Science Research Council the use of the addressograph list for the purpose of sending to the members of our Association copies of the annual report of that organization.

As a part of the work of the Association the following items of business may be reported from this office:

(a) In accordance with the instructions of the Executive Committee,

announcements concerning the publication of the volume of *Economic Essays* in honor of Professor John Bates Clark were prepared and circulated, and arrangements were made with the Royal Economic Society by which its members were offered the volume at a reduced price. Up to date, 379 orders have been received for this volume, leaving a surplus now available for members of the two associations of 621.

(b) Literature descriptive of the *Encyclopædia of the Social Sciences* was sent to the members of the Association and the orders received transmitted to the Editor of this work.

(c) Through the courtesy of the Royal Economic Society, the membership of the Association was offered George Unwin's *Studies in Economic History* at a reduced rate. This makes the fifth work published by the Royal Economic Society that has been offered on special terms to the membership of this Association.

(d) The Secretary attended a meeting of the secretaries of the constituent societies of the American Council of Learned Societies. There were many matters pertaining to the operations of scientific societies that were discussed, such as membership fees, financing research projects, and the raising of endowments for the maintenance of research. Several of the affiliated societies undertake to foster research directly by providing a publication fund for those studies which cannot find a commercial publisher.

During the year the President has made the following appointments:

Delegates to the meeting of the American Philosophical Society, E. R. Johnson, E. M. Patterson.

Member of the Board of Directors of the *Encyclopædia of Social Sciences*, J. H. Hollander.

To an Advisory Committee for this same project, E. F. Gay, F. A. Fetter.

Representative on National Community Trust, John H. Gray.

Representatives to Pan-American Congress, A. L. Bishop, T. W. Page, and C. E. McGuire.

Committee on Local Arrangements, H. G. Moulton, T. W. Page, C. O. Hardy, and Roland Hugins.

Auditing Committee, Paul L. Morrison, C.P.A., John V. Tinen, C.P.A.

Nominating Committee, John R. Commons, T. N. Carver, E. R. Johnson, H. G. Moulton, Ira B. Cross, R. B. Westerfield.

Committee on Honorary Members, Davis R. Dewey, Clive Day, L. C. Marshall, J. M. Clark.

Representatives to the First International Congress of Soil Science, H. C. Taylor, Edwin G. Nourse.

Representative to the International Institute of Intellectual Co-operation, Chester Lloyd Jones.

The following table shows the present status of the membership and the changes that have occurred during the year ending December 10, 1927, the date of closing the books of the Association.

Members and subscribers in December, 1926			3453
Annual members in December, 1926		2588	
Members resigned in 1927	67		
Members removed for lack of address	22		

Members dropped for nonpayment of dues	129		
Annual members died	26	244	
		2294	
New members in 1927		268	
Total annual members in December, 1927		2562	
Life members in December, 1926	88		
Life members removed in 1927 (died)	2		
Total life members in December, 1927		86	
Honorary members in December, 1926	14		
New honorary members in 1927	2		
Total honorary members in December, 1927		16	
Total members in December, 1927		2664	
Subscribers in December, 1926	813		
Subscribers discontinued in 1927	127		
	686		
New subscribers in 1927	157		
Total subscribers in December, 1927		843	
TOTAL MEMBERS AND SUBSCRIBERS IN DECEMBER, 1927			3507
Net Gain			54

It will be noted that there has been a slight increase in membership during the year. However, the number of subscribing and contributing members has been declining during the last two years, as can be seen from the decrease in income from this source shown in the auditors' report.

The Secretary earnestly solicits the co-operation of the members in furnishing the names and addresses of persons likely to be interested in the work of the Association. It is particularly desirable to have this information concerning graduate students and young instructors in this field. If the members will co-operate by giving us these data on the slips prepared for their convenience, the office can very easily handle the correspondence involved in sending the invitations.

During the year the death of the following members has been reported and their names have been removed from the mailing list.

James Ekin Allison
Stewart D. Beckley
Leopoldo Y Luna Cancio
C. A. Coffin
Robert C. Davis
Martin A. Gearheart
George K. Holmes
William H. Porter
J. H. T. Ryman
C. H. Scovell
Pierre J. Smith
Galen L. Stone
Oscar S. Straus
William H. Thornley
Simeon Eben Baldwin (Life Member)
George R. Bunker
William Wallace Childs
Joseph E. Cummings
Cleveland H. Dodge
Lester Charles Geiger
Henry Holt
Frank Roy Rutter
Austin Scott (Life Member)
E. W. Scripps
John Lammey Stewart
James J. Storrow
A. J. Sunstein
David L. Wing

Respectfully submitted,

F. S. Deibler,
Secretary.

REPORT OF THE TREASURER OF THE AMERICAN ECONOMIC ASSOCIATION FOR THE PERIOD ENDING

DECEMBER 10, 1927

The report of the Treasurer is based, as last year, on the figures contained in the report of the Auditing Committee. Some additional detail and interpretation will render this report somewhat more illuminating.

There has been a total increase of income during the year of $275.84. The income from dues shows a net increase of $390.52, notwithstanding a decline of $367.50 from subscribing and contributing memberships. This item has declined yearly since 1925 when it was $1,610.00. The large decline in defaulted dues from members, $514.00 is due to the change in policy in carrying members on the mailing list for six instead of twenty-one months as had been the previous practice.

The decline of $86.71 in interest from investments, savings accounts, and bank balances, is explained mainly by the deduction of the fee of the custodian of the securities from earnings, and by a lower interest yield on some of the reinvestments. This fee covers a period of eighteen months and hence is higher on this account.

The prepaid dues and subscriptions remain at approximately the same figure as last year; namely, $2,021.00 in 1926, and $2,030.02 in 1927.

On the side of expenditures, there has been a decline in administration and operating expenses of $383.86, of which $321.34 was a saving of salaries in the Secretary's office.

In connection with Committee expenses, it should be recorded that an appropriation of $250.00 was made again this year to help defray the preliminary expenses of the Committee promoting the *Encyclopædia of the Social Sciences*. The total sum appropriated to this project is now $500.00, which will eventually be refunded to the Association and charged as an editorial expense against the *Encyclopædia*. In addition to this sum, $64.17 was spent during the year in postage and expressage in connection with the circularization of the membership concerning this project.

The total publication expense shows a decrease of $1,005.24. This decrease is explained by a decline in the cost of the *Proceedings* and by the absence of the *Handbook* which is published in alternate years. The detailed figures are given below:

	1926	*1927*	
Printing	$5,332.24	$ 5,619.20	
Editorial	1,500.00	1,500.00	
Contributions	1,128.00	1,013.75	
Editorial Expenses and Supplies	1,913.29	2,103.75	
	$9,873.53	$10,236.70	+$363.17
Proceedings	$2,133.76	$ 1,519.41	
Handbook	836.65		
	$2,970.41	$ 1,519.41	—$1,451.00

There is an increase of $363.17 in the publication expense in connection with the *Review*, which appears in the items of printing and editorial expenses. The additional printing expense is explained mainly by the June supplement to the *Review*. The decrease in cost of *Proceedings* is due to the difference in the size of the volume—353 pages in 1926, as against 218 in 1927.

Another item appearing under publication expense in Exhibit II of the auditors' report should receive a word of explanation; namely, that of storage. This item is the charge for storing the file of back numbers of the *Review*, *Proceedings*, etc. Through an oversight, this charge was unpaid for the year 1925, and has been included in the expenses of the current year, bringing this item from $150.00 to $300.00, and completing all payments on account of this item to date.

During the year the *Economic Essays* have been published. The total expenditures up to the present time on account of this volume have been $2,769.81. There will be some additional expenses for boxing, postage, etc., as the remaining volumes are sold and shipped. The receipts to date from sales amount to $1,005.29. We carry an inventory of volumes unsold of $1,483.20. Through the disposal of these volumes and royalty on general sales, the entire cost of this project should eventually be defrayed.

The total investments of the Association now amount to $29,000.00 par, cost $28,688.45, with an annual interest yield of $1,570.00. The list of holdings and transactions during the year are given in the report of the Finance Committee.

The assets of the Association as of December 10, include a current balance in the checking account of $62.91; savings account, $5,280.80; and investments of $28,688.45 listed at cost. The liabilities are: prepaid dues and subscriptions, $2,030.02; membership extension fund, $5,468.49; and life memberships of $6,025.00 The net surplus as shown in the auditors' report is $30,092.29, a gain of $1,660.98 during the current year.

The finances of the Association are on a sound basis, but could be materially strengthened by an increase in members and by a larger number of the existing members entering the subscribing and contributing list.

Respectfully submitted,

F. S. Deibler, *Treasurer*

Chicago, Illinois

December 19, 1927

REPORT OF THE AUDITING COMMITTEE

Executive Committee
American Economic Association, Incorporated
Evanston, Illinois

Dear Sirs:

We have audited the books and records of the American Economic Association for the year ending December 10, 1927, and present herewith our report and the following statements—

Balance sheet—December 10, 1927	**Exhibit I**
Statement of income and expense— Year ending December 10, 1927	**Exhibit II**

Results from Operations

Income for the year ending December 10, 1927, exceeded expense by $1,660.98, as compared with $85.21 for the previous year (Exhibit II). There was both an increase in income and a decrease in expense in the 1927 fiscal year as compared with the 1926 fiscal year, as may be observed from the following summary for the two years:

	Year ending December 11, 1926	Year ending December 10, 1926	Increase or *Decrease*
Income from dues	$12,934.30	$13,324.82	$ 390.52
Income from investments and bank balances	1,870.02	1,783.31	*86.71*
Other income	32.35	4.38	*27.97*
Total income	$14,836.67	$15,112.51	$ 275.84
Administrative and other operating expense	$ 6,272.77	$ 5,888.91	*$ 383.86*
Publication costs	13,212.13	12,206.89	*1,005.24*
Publication income	*4,733.44*	*4,925.59*	192.15
"Economic Essays"		281.32	281.32
Total expense	$14,751.46	$13,451.53	*$1,299.93*
Surplus net income	$ 85.21	$ 1,660.98	$1,575.77

The increase in income from dues is accounted for as follows:

Increase in dues for regular members	$244.02
Decrease in defaulted dues of regular members regarded as income in prior year	514.00
Decrease in dues of subscribing and contributing members	*367.50*
Net increase in income from dues	$390.52

The decrease in expenses is accounted for largely by the fact that the *Handbook* was published in 1926 but not in 1927.

Balance Sheet

We verified all of the balance sheet items. Cash balances and investments were satisfactorily reconciled with statements from the depositories. Unpaid accounts receivable were supported by detail ledgers. Additions to furniture, fixtures, and bound periodicals were properly recorded. Unearned income accounts were supported by detailed records.

As of the date of our examination, all ascertained liabilities of the Association had been recorded and paid.

It is to be noted that it is not the custom of the Association to place any value on back numbers of its publications.

Changes in Financial Position

The following summarized comparative balance sheet at December 11, 1926, and December 10, 1927, shows the increases and decreases in the various items:

	December 11, 1926	December 10, 1927	Increase or *Decrease*
Assets			
Cash and cash funds	$ 7,474.77	$ 5,343.71	*$2,131.06*
Investments, at cost, plus accrued interest	27,116.06	29,117.77	2,001.71
Receivables (net)	469.20	539.47	70.27
Inventories (at cost)			
Paper stock	260.18	307.98	47.80
"Economic Essays"		1,483.20	1,483.20
Furniture, fixtures, and bound periodicals (at cost)	1,052.01	1,106.53	54.52
Reserve for depreciation on furniture and fixtures	*219.34*	*307.86*	*88.52*
Total assets	$36,152.88	$37,590.80	$1,437.92

Liabilities and net worth			
Accounts payable	$	$	$
Unearned income	2,021.00	2,030.02	9.02
Membership extension fund	5,700.57	5,468.49	*232.08*
Surplus—Balance, December 11, 1926	22,356.31	22,356.31	
Surplus net income—Year 1927		1,660.98	1,660.98
Transfer from life memberships to surplus		50.00	50.00
Life memberships	6,075.00	6,025.00	*50.00*
Total liabilities and net worth	$36,152.88	$37,590.80	$1,437.92

From the above statement, it is to be noted that the decrease in cash corresponds with an increase in investments and that the income for the year approximates the cost of the "Economic Essays" still on hand.

The records in the Secretary's office were in efficient and commendable condition.

Very truly yours,
John V. Tinen, C.P.A.
Paul L. Morrison, C.P.A.
Auditing Committee

Note.—In the course of the audit certain questions were raised in respect to the method of keeping the inventory of back numbers, a problem that has caused the Secretary's office a good deal of trouble. As the result of the discussion of this problem with the auditors, an opinion as to procedure is expressed in the following letter:

December 21, 1927.

Mr. F. S. Deibler
Secretary-Treasurer
American Economic Association, Inc.
Evanston, Illinois

Dear Sir:

In connection with our examination of the records of the American Economic Association, we suggest that the following information be certified to by the publisher about each issue of the *Review* which is published:

Number of copies published
Number of copies sent to members

Number of copies sent to other than members
Balance on hand

In each quarter the publisher should report the number of copies of old issues sent out. In this way it will be possible for your office to maintain an accurate perpetual inventory of copies of the *Review* on hand and it will make it possible for auditors to have a check on the membership roll and the publication activities.

Respectfully submitted,
JOHN V. TINEN
PAUL L. MORRISON
Auditing Committee

Arrangements have been made with the new printer to put this procedure into effect.
F. S. DEIBLER, *Secretary*

EXHIBIT I

AMERICAN ECONOMIC ASSOCIATION

BALANCE SHEET, DECEMBER 10, 1927

Assets

CURRENT ASSETS:			
Cash in bank—			
State Bank and Trust Company, Evanston, Illinois			
Checking account	$ 62.91		
Savings account	1,190.23		
Central Trust Company, Cambridge, Massachusetts			
Savings account	4,090.57	$ 5,343.71	
Investments (at cost)	$28,688.45		
Interest accrued thereon	429.32	29,117.77	
Receivables—			
Membership dues	$ 382.50		
Publication sales	116.67		
"Economic Essays"	115.30		
Total receivables	$ 614.47		
Reserves for doubtful receivables	75.00	539.47	
Inventories (at cost)—			
Paper stock	$ 307.98		
"Economic Essays"	1,483.20	1,791.18	
Total current assets			$36,792.13
FURNITURE, FIXTURES, AND BOUND PERIODICALS AT COST		$ 1,106.53	
Reserve for depreciation		307.86	798.67
Total assets			$37,590.80

Liabilities and Net Worth

UNEARNED INCOME:			
Membership dues		$ 445.00	
Subscriptions		1,585.02	$ 2,030.02
MEMBERSHIP EXTENSION FUND			5,468.49

NET WORTH:			
Life membership		6,025.00	
Surplus unappropriated—			
Balance—December 11, 1926, per audit report	$22,356.31		
Excess of income over expenses—Year ending December 10, 1927 (Exhibit II)	1,660.98		
Transfer from life membership due to deaths of two life members	50.00	24,067.29	30,092.29
Total liabilities and net worth			$37,590.80

EXHIBIT II

AMERICAN ECONOMIC ASSOCIATION

STATEMENT OF INCOME AND EXPENSE, YEAR ENDING DECEMBER 10, 1927

INCOME FROM DUES:			
Regular members (less $125.00 defaulted dues unpaid at December 11, 1926)		$12,432.32	
Subscribing and contributing members		892.50	$13,324.82
OTHER INCOME:			
Income from investments—			
Interest earned	$ 1,524.70		
Profit on sale of securities	13.15		
	$ 1,537.85		
Custodian's fee	40.20	$ 1,497.65	
Interest earned on savings and checking accounts		285.66	
Miscellaneous income		4.38	1,787.69
Total income			$15,112.51
ADMINISTRATIVE AND OTHER OPERATING EXPENSE:			
Secretary's salary	$ 1,000.00		
Office salaries	2,712.80		
Postage	349.62		
Stationery and printing	164.34		
Office supplies	51.06		
Telephone and telegrams	95.68		
Insurance	79.10		
Depreciation	88.52		
Annual meeting	301.38		
Executive committee expense	487.42		
Other committee expense	315.67		
American Council of Learned Societies	132.00		
Auditing	76.95		
Other expense	34.37	$ 5,888.91	
PUBLICATION EXPENSE:			
Printing	$ 5,619.20		
Editor	1,500.00		
Contributions	1,013.75		
Editorial expenses and supplies	2,103.75		
Proceedings	1,519.41		
Storage	300.00		
Insurance	56.00		
Sundry publication expense	94.78		
Total publication expense	$12,206.89		

Publication income—				
Subscriptions other than from members	$4,022.57			
Sales of copies	903.02	4,925.59	7,281.30	
"Economic Essays":				
Printing		$ 2,400.00		
Other expense, including shipping		369.81		
		$ 2,769.81		
Sales (at cost of printing and shipping)	$1,005.29			
Inventory, December 10, 1927	1,483.20	2,488.49	281.32	
Total expense				$13,451.53
Surplus net income for year (Exhibit I)				$ 1,660.98

REPORT OF THE FINANCE COMMITTEE

During the year the following changes were made in the list of investments held by the Association:

Called	*Par*	*Selling Price*
Sheffield Farms Company, 1st. and Ref. 6½%, due Oct. 1, 1942 at 107½	$1,000.00	$1,075.00
Sold		
2nd Liberty, 4¼%, at 100.24	1,000.00	1,002.40
3rd Liberty, 4¼%, at 100.82	1,000.00	1,008.20
Bought		*Cost*
4th Liberty, 4¼% of 1933-38, at 103.76	2,000.00	2,075.20
Crown Willamette Paper Company, 1st. and S. F. 6%, 1951 at 100⅜	1,000.00	1,003.75
By-Products Coke Corporation, 1st. mtg. 5½%, Nov. 1, 1945	1,000.00	1,020.00
National Dairy Products, Coll. Tr. 6%, 1940, at 103¼	1,000.00	1,032.50

The total investments of the Association are now $29,000.00 par, cost $28,688.45. The annual interest on these investments amounts to $1,570.00. The interest on idle funds in the checking account was $31.88 during the past year.

The investment list stands as follows:

Bonds	*Par Value*
Bell Telephone Co. of Pennsylvania, First and Refunding Mortgage 5%	$2,000.00
Louisville Gas and Electric Co., First and Refunding Mortgage 5%	1,000.00
Northern Pacific Railway Co., Refunding and Imp. Mtg. Series "B" 6%	5,000.00
Commonwealth Edison Co., First Mortgage 5% Gold Bonds	2,000.00
Pacific Gas and Electric Co., First and Refunding Mortgage 5½%	2,000.00
Armour and Co., of Delaware, First Mortgage 20 year 5½% Gold Bonds	2,000.00
Illinois Bell Telephone Co., First and Refunding Mtg. Series "A" 5%	2,000.00
Illinois Central Railroad Co. Jt. First and Refunding Mtg. Series "A" 5%	2,000.00
Standard Milling Co., First and Refunding Mortgage 5½%	2,000.00
Pacific Mills "Ltd." First Mtg. Ser. 6%	2,000.00
Great Northern Railway Co., General Series "A" 7%	1,000.00
Southern Illinois and Missouri Bridge Co., First Mortgage 50 yr. 4%	1,000.00
Crown Willamette Paper Co., First Mortgage Sinking Fund 6%	1,000.00
National Dairy Products Corp. 15 year Coll. Tr. 6%	1,000.00
U. S. of America Fourth Liberty Loan 4¼%	2,000.00
By-Products Coke Corp., First Mortgage Series "A" 5½%	1,000.00
TOTAL SECURITIES	$29,000.00

Respectfully submitted,

C. H. Crennan

Waddill Catchings

F. S. Deibler

REPORT OF THE MANAGING EDITOR OF THE AMERICAN ECONOMIC REVIEW FOR THE YEAR ENDING DECEMBER, 1927

The cost of the *Review* during the past year was $10,236.70 as compared with $9,873.53 in 1926, an increase of $363.17. The increase is in part due to the publication of the supplement relating to the Clark dinner, which was mailed with the June issue. This amounted to $185.11. The increase is also in part due to the printing of more pages—eight in all—in the total volume. The average per issue number of copies printed this year was 4,100 as compared with 4,175 in 1926.

By principal items the cost of the *Review* during 1927 was as follows:

Salary of editor	$ 1,500.00
Clerical assistance	1,806.50
Supplies	297.25
Payments to contributors	1,013.75
Printing (including paper, reprints, postage, etc.)	5,619.20
	$10,236.70

On the basis of printing, 4,100 copies, the following budget for 1928 is submitted:

Printing (paper, reprints, postage, etc.)	$ 5,500.00
Editorial	1,500.00
Clerical	1,900.00
Supplies	300.00
Contributors	1,200.00
	$10,400.00

The following persons have served as editors during the past year: Professor J. M. Clark and Dr. E. G. Nourse, whose terms expire this year; Professor E. M. Patterson and Professor Ray B. Westerfield, whose terms expire in 1928; and Professor John Ise and Professor Frank H. Knight, whose terms expire in 1929.

During the past year 118 persons have co-operated in the preparation of the *Review*, including leading articles, communications, reviews, document notes, and periodical abstracts.

Appended are the comparative tables showing the distribution of contents and cost by principal items, in the continuation of tables previously given.

Davis R. Dewey

Managing Editor

TABLE I—PAGES GIVEN TO EACH SECTION.

Year	Leading Articles	Reviews	New books listed	Documents, reports, etc.	Periodical abstracts	Notes	Theses	Totals
1911	342	304	62	89	133	40	8	978
1912	291	298	101	110	186	41	11	1038
1913	347	268	104	141	167	43	8	1078
1914	327	243	136	113	166	35	10	1030
1915	314	257	90	142	144	42	14	1003
1916	388	256	91	90	140	46	13	1024
1917	378	192	110	127	120	42	15	984
1918	389	157	91	112	99	41	17	906
1919	374	163	154	103	95	47	12	948
1920	395	109	155	98	122	42	15	936
1921	331	103	133	39	117	38	11	772
1922	293	91	159	35	124	37	13	752
1923	298	122	184	26	113	43	14	800
1924	339	110	191	23	113	42	18	836
1925	325	131	178	27	110	38	23	832
1926	270	137	184	15	108	43	27	784
1927	262	120	195	32	114	42	27	792

TABLE II—EXPENDITURES.

Year	Printing	Salary of editor	Payments to contributors	Clerical	Supplies	Totals
1911	$2495.18	$1500.00	$1320.25	$ 865.50	$413.51	$6730.59*
1912	3220.83	1500.00	1114.50	794.89	292.68	6922.90
1913	3328.01	1500.00	1268.35	983.09	325.10	7404.55
1914	3023.62	1500.00	1312.25	1236.29	459.18	7531.34
1915	2834.91	1500.00	1210.00	1171.87	286.86	7003.64
1916	3257.27	1500.00	1423.00	1173.93	339.86	7694.06
1917	3762.37	1500.00	1267.00	1151.30	326.01	8006.68
1918	3497.73	1500.00	1203.25	1260.06	332.73	7793.77
1919	5049.50	1500.00	1231.50	1325.93	347.84	9454.77
1920	6656.31	1500.00	1122.75	1595.64	307.20	11181.90
1921	5646.97	1500.00	64.50	1472.50	319.97	9003.94
1922	4795.28	1500.00	....	1370.00	314.77	7980.05
1923	5032.59	1500.00	....	1650.09	437.86	8620.54
1924	5423.28	1500.00	1110.25	1464.01	305.32	9802.86
1925	5713.01	1500.00	1133.50	1757.32	406.36	10510.19
1926	5332.24	1500.00	1128.00	1589.86	323.43	9873.53
1927	5619.20	1500.00	1013.75	1806.50	297.25	10236.70

* Includes $136.15, traveling expenses of editors.

NINTH ANNUAL REPORT OF THE JOINT ADVISORY COMMITTEE TO THE DIRECTOR OF THE CENSUS FROM THE AMERICAN STATISTICAL AND AMERICAN ECONOMIC ASSOCIATIONS

In the last annual report to the two Associations represented by the Advisory Committee it was pointed out that the intercensal period is one in which comparatively few problems accumulate which in the opinion of the Director justify his calling the Joint Committee together for conference. In 1927 the Joint Committee has been summoned twice to Washington, and sessions were held on June 17 and 18 and on November 11 and 12. These meetings have been more important than is customary at this period in the decade because of the fact that the Director of the Census, in addition to minor problems of administation and policy in connection with current inquiries, has consulted at length with the Advisory Committee concerning the content and form of the Bill which he has been preparing to submit, through the Department of Commerce, to Congress for consideration by the Census Committee of the House, with a view to securing legislation for the Fifteenth Census.

The population of the United States with its large decennial increase has now reached such proportions—much in excess of a hundred million—that the problem of taking an accurate census of all the inhabitants of the country has become a colossal one. In the opinion of the Director of the Census this raised a serious question whether it was not advisable to devote the activities of the Bureau at a decennial census to population alone. This and other problems he reviewed at length with the representatives of the two Associations. It is probable that from his own studies and the advice of the Committee, while no radical change will be made in the general schedules of the Fifteenth Census, the activities of the Bureau are likely to be confined to population and agriculture, the two main inquiries, with the possible addition of a census of distribution. The industrial census is now provided for by an effective biennial census. The Committee, however, is of course merely an advisory body, and the Director's final recommendations will in due season be imparted to Congress as indicated.

Your attention is invited especially to the fact that this is the ninth annual report which has been submitted, some of which, during the earlier life of the Advisory Committee, were in printed form and were documents of some length. These reports were the result of many Committee meetings held during the progress of census inquiries or tabulations, when a great number of subjects arose for consideration and thus the advice of the Advisory Committee was frequently sought. It is extremely gratifying to us, in referring to the long life of the Committee, to emphasize the fact that of the many committees of this general character which were formed during and just after the Great War, probably your representatives are the only remaining advisory group which has continued in active service—a definite contact body between the leading statistical organization of the federal

Government and the two great national associations by their purpose and membership especially interested in statistical work. The Director has been good enough to express at frequent intervals his appreciation of the service which has been rendered and his gratification in relying upon the Committee for expert advice in connection with problems, large and small, which arise in a Bureau of the importance and with the ramifying interests of the census.

It has been possible for the Committee on some occasions, by reason of local relationships, to be of practical assistance. One small problem which has given the Bureau considerable embarrassment for a number of decades has been the determination of rural population in three of the New England states, where the boundaries of towns did not permit of the sharp separation under a classification of urban as twenty-five hundred and over and rural as under twenty-five hundred population, and in consequence the figures employed for those three states have not clearly indicated the real separation of rural and urban population. Through the efforts of your Committee this problem has been met in the state of New Hampshire by drafting a Bill instructing town officers to designate boundaries in certain towns which could be used as the determination of urban population. The form of this Bill was approved by the Director as embodying an effective plan of procedure, and the Bill, at the request of the Governor, was passed by the Legislature, so that this defect in New Hampshire urban and rural classifications will be remedied at the next census, and the Bill is being used as a model for the other two states, in which it is fully expected that acts of similar import will be passed at the approaching sessions of the Legislatures of Massachusetts and Rhode Island.

The Committee desires to express its keen regret at the retirement of Professor Allyn A. Young, who, with one or two others still members of the Joint Committee, was instrumental in arranging for this successful and long-continued contact. Professor Young's departure from this country made his retirement necessary shortly before the expiration of his current term of service, and I am instructed by the Director to express to the Association his deep appreciation of Professor Young's long-continued service and the great value of his wide experience and great ability in dealing with census problems.

In conclusion, the Committee desires to remind you that the value of the close co-operation now existing between the Bureau and the two Associations, which the Director has utilized with much skill and thought, depends in large measure upon the previous knowledge possessed by the representatives of the two Associations as to census problems, so that they can be appealed to for advice based upon previous knowledge and experience derived either from having been connected with the Bureau in earlier activity or else from having been workers in statistical material prepared by the Bureau. Success in future years of this co-operation will be assured if the two Associations will establish this requirement as an important qualification for election.

Again we desire to pay our sincere tribute to the Director of the Census for the unusual sagacity and skill with which he conducts the Bureau through

many trying situations, and for the untiring thought which he gives to the further development of the machinery of the Bureau and to the quality of the personnel, within the limited conditions of Government service. The memory and contacts of a number of members of your Joint Committee go back many years in census history, and in their opinion, including that of Professor Young, expressed before his departure for England, the Bureau in our time has never been conducted more efficiently than it is at present being conducted by Director Steuart.

With much respect,

For The American Statistical Association
William S. Rossiter, *Chairman*
Robert E. Chaddock
Seymour L. Andrew

For the American Economic Association
Walter F. Willcox
George F. Warren

December 20, 1927.

REPORT OF THE REPRESENTATIVES OF THE ASSOCIATION ON THE SOCIAL SCIENCE RESEARCH COUNCIL

The attention of the Association is called to the Third Annual Report of the Social Science Research Council, which has been printed and distributed to the membership of the Association. This report gives a complete statement of the activities, research projects, and financial aid to research that have been fostered by the Council during the past year. Instead of digesting this report for the *Proceedings,* we recommend that the members consult the full statement made by the Council.

Respectfully submitted,

George E. Barnett
Horace Secrist
W. W. Stewart

JOINT COMMITTEE ON ABSTRACT JOURNAL OF SOCIAL SCIENCES[1]

Report was made that an *Abstract Journal of the Social Sciences* had been underwritten for a period of ten years and that a sum of $500,000 had been provided for this purpose. The joint committee which had carried on the preliminary work in connection with this project requested that the American Economic Association appoint a committee to advise with the Organizing Committee in respect to personnel, classification, subscription rates, operating plan, etc.

REPORT OF REPRESENTATIVES TO THE AMERICAN COUNCIL OF LEARNED SOCIETIES

Your delegates to the American Council of Learned Socities submit the following report regarding the activities of that Council during the calendar year of 1927:

The Council is the American member of the International Union of Academies and was represented at the annual meeting in Brussels by its Executive Secretary and a delegate. There is proposed a survey of current bibliography covering the field of the Academies and similar bodies composing the Union. The proposal was approved and the Council asked to undertake the compilation for American countries.

Negotiations for enlarging the Union by adding the Academies of the Central Powers are in progress, with the American delegates urging that an invitation satisfactorily worded be extended to them. The outlook for securing that result in the near future seems hopeful.

The *Dictionary of American Biography,* an outcome of work of a committee of the A.C.L.S. and based upon a generous subvention from the *New York Times,* is in course of preparation. It will fill about twenty volumes octavo, the first of which is expected to appear in the summer of 1929; thereafter, about three volumes a year are to be published.

[1] Abstract prepared by the Editor.

A committee on small grants to aid research distributed the sum of $5,000 allotted to it by the Laura Spelman Rockefeller Memorial in twenty-one grants, none exceeding $300 to as many scholars engaged on research problems.

A survey of research in the humanistic and social sciences, financed by a grant from the Carnegie Corporation, is approching completion.

Another committee has been financed and has begun to study, with the help of two experts, the proportions of the white blood now in the United States which are drawn from various European countries; and has made much progress towards reconciling earlier conflicting results.

The General Education Board has agreed to provide for the administrative expenses of the Council up to a maximum of $25,000 a year for five years, and, in consequence, the Council now has permanent headquarters in Washington, the services of a full-time Executive Secretary and funds with which to facilitate the work of its standing and special committees.

Respectfully submitted,

W. F. Willcox

E. F. Gay

Delegates

ABSTRACT FROM PROFESSOR SELIGMAN'S REPORT ON THE ENCYCLOPÆDIA OF THE SOCIAL SCIENCES[1]

After giving a brief historical sketch of the steps taken in formulating the plan for the *Encyclopædia* and of securing the necessary financial support, Professor Seligman outlines the work that has been accomplished during the past year as follows:

"In the first place, in order to test out the possibilities of the enterprise, the editor prepared a Memorandum embodying the salient features of the project and including letters of approval from distinguished well-wishers. This was sent out to about twenty thousand members of the various societies, with an invitation to subscribe to the work. Much to his gratification, approximately two thousand subscriptions were received—a fact which may be considered as insuring the financial possibilities of publication.

"The second point pertained to the organization of the work. Under this head it was necessary to make a four-fold provision. The first involved the selection of the staff. After much deliberation the editor invited Dr. Alvin S. Johnson, director of the New School for Social Research and with much experience in encyclopædia work, to become assistant editor, and with some difficulty prevailed upon him to accept. Dr. Alexander Goldenweiser was selected as associate to advise in the broad fields outside of economics proper. Miss Mary E. Gleason was selected from amid a host of applicants for the position of secretary. A number of younger men and women, well trained in philosophy and social science, were chosen temporarily to begin work under the direct supervision of Dr. Johnson.

"The third point was the provision for the business end of the organization. Believing that the best legal advice was indispensable, the firm of Sullivan and Cromwell, of New York, was retained. With their help the enterprise was incorporated as Encyclopædia of Social Science, Inc., and a temporary organization was effected. Finally, a highly satisfactory arrangement was made for the custody of the funds whereby we were enabled to receive from one of the leading banks in the country considerably more than the ordinary rate of interest.

"With the completion of these formalities the work was now started in earnest. During the summer of 1927 this assumed two forms. The assistant editor was able to perfect a plan for the preliminary or spade work, which in our opinion was both economical and efficient. After considerable testing out, a force of six scholarly assistants was retained for the details of the work; while Dr. Goldenweiser looked after some of the larger aspects of the enterprise.

"On the other hand, the editor went to Europe in order to enlist the support of the leading European scholars. In the course of a trip which included virtually all the important universities from Oslo to Florence, he conferred with hundreds of the most distinguished colleagues scattered throughout Europe. He was both astonished and heartened by the enthusiasm that was manifested on all sides and by the readiness of virtually everyone to lend his hearty co-operation in what was recognized to be not only a gigantic project but one which would be of signal importance to the progress of the social sciences throughout the world.

"In the autumn of 1927 the time came for permanent organization. Accordingly, provision was made for a Board of Directors of twenty-one members, eight lay and thirteen academic, the latter to be selected by the constituent societies. We were fortunate in securing for the lay directors eight of the foremost figures in industry, finance and law. The permanent members of the corporation include, in addition to the editor and assistant editor, three representatives from each of the constituent societies. In this way the conduct of the entire enterprise lies in last instance in the hands of a joint committee composed of representatives of the constituent associations. Inasmuch as it was important to have the directors fairly close to New York, it will be found that while the Joint Committee includes individuals from every section of the country, the directors are found primarily in the eastern third of the country.

"Provision was also made for the selection of a Board of Advisory Editors.

[1] Abstract prepared by Editor.

The members of this board were selected by the editor, and number seventeen Americans and eleven foreigners.

"The problems that confront the enterprise may be put in three categories:

"First, the selection of the publisher. This involves a whole series of considerations, for it is the hope of the editors that the Encyclopædia will mark a revolution in the matter not only of content but also of form. Serious attention will have to be paid to the general appearance of the Encyclopædia from the point of view of size, format, type and binding, and it is only after these matters have been settled that the distributing side of the enterprise will have to be considered. It is hoped to be able to come to a decision as to the publisher within the next few weeks.

"The second point deals with the contents of the work. Here there are many major, as well as numerous minor, problems which await settlement. The inclusion of more or less outlying fields which have never yet been comprised under the head of social sciences, but which now become necessary or at all events desirable, is one of the most difficult questions that confront the editors. Such are, for instance, the problems as to how far we should deal with art, with philology, with religion, with education and the like. In the fields which are less contentious, considerable progress has already been made, as will be evident from the report of the assistant editor which is subjoined.

"The third point of major importance is that while the work is primarily Anglo-Saxon and, so far as its management is concerned, American, it goes without saying that the most distinguished scholars of the whole world will be laid under contribution. In a work of such gigantic dimensions, involving thousands of separate articles, there will be room, in this country at least, for the co-operation of virtually every serious scholar. It has been decided to offer to every contributor the same scale of remuneration which, while not extravagant, may be considered adequate.

"In conclusion we may say that as the work proceeds we are more and more impressed by the immensity of the enterprise, by the difficulties involved, but, above all, by the opportunities offered. It is hoped to make the encyclopædia subservient to three ends: (1) to provide a synopsis for the scholar of the progress that has been made in the various fields of social science, in the broadest aspect of that term, and, what is perhaps more important, to serve as an incentive to the votaries of the younger sciences as well as to the more progressive representatives of the older sciences, in order to bring to fruition what is now only in the germ; (2) to furnish an assemblage or repository of facts and principles which will serve the interests of the legislator, the editor, the business man and all those who are interested in keeping abreast of recent investigation and accomplishment; (3) to constitute a center of authoritative information for the creation of a sounder public opinion on the major questions which lie at the foundation of social progress and world development.

"It is in these three separate ways that we hope to realize the high ambitions of those who originally projected this gigantic and significant enterprise."

The Assistant Editor reports as follows:

"As the work we are undertaking is a general encyclopædia of the social sciences, intended to meet the needs of a wide variety of scholars, as well as of the intelligent layman, we are building up the body of the work out of compactly organized topics instead of extended discussions of whole parts of a subject. By this plan all the material in the encyclopædia can be made easily accessible to the non-specialized inquirer. A carefully worked-out system of cross-references will enable the student with a special interest to cover thoroughly any part of the field.

"The preliminary survey of the field of the social sciences has impressed upon the editorial staff the need of brevity of treatment throughout the work. Eight million words, which at first blush appeared ample space, now appears adequate only on condition of the greatest practicable economy of space. We can not be so generous with space for economic articles as Palgrave; we can not enter into details of government with the freedom of the Cyclopædia of American Government; we can not give the space to historical discussion that characterizes the Handwörterbuch der Staatswissenschaften. Contemporaneous subjects, moreover, make new demands on our space, and the requirements of a work which seeks to coordinate the various social sciences and to indicate their relation to the general movement of thought involves the inclusion of many topics not usually treated in the special encyclopædias.

"We believe, however, that by careful specification of the field of each article, designed to preclude duplication and to eliminate matter of a curious rather than a scientific interest, we can cover the field adequately within the limits prescribed.

"The typical article will be brief. Most biographies of scholars will have to be kept down to 250 words or less. Other articles will range as a rule from 500 to 5,000 words. Very important ones, covering a wide field, may run as high as 20,000 or even 25,000 words. This will especially be the case with articles requiring extensive statistical tables, like wages, public finance, and transportation.

"For the sake of giving unity to the work, it is proposed to equip it with an extended introduction, occupying perhaps 200 pages, with the following general plan:

"1. An account of the plans and purposes of the present work.

"2. A history of encyclopædia making, with an appraisal for social scientific uses, of the encyclopædias now in general use.

"3. A history of the social sciences, analyzing by periods from the time of the Greeks the chief content of social science, the institutional situation (e.g. city, state, world empire, absolute monarchy, constitutional government, slavery, serfdom, free labor); the general movement of thought, religious, philosophical, scientific; the methods employed. It is proposed that this work be subdivided among scholars who have specialized in the intellectual history of the several periods.

"The object of this section will be to exhibit, in historical, and so far as may be in non-controversial fashion, the filiation of the social sciences and their contemporaneous relationship; their dependence on the institutional and general intellectual situation, the methodology actually employed. Naturally the plan will involve a progressive extension of scope with the successive periods. Probably one-half the total space will be absorbed by the contemporary period, in which we have on the one hand a striking tendency toward subdivision and specialization of method and technique, and on the other hand a powerful tendency toward synthesis and criticism in terms of general scientific method.

"4. An analysis of the terminology of the social sciences, historical and comparative. This will be a relatively compact section, but of great importance in relation to the problems of method.

"5. A rigorously selected bibliography, covering the works of primary importance in the development of the social sciences.

"The chief work of the staff through the summer and fall has been to assemble a list of topics for the entire work, and to form tentative plans for the treatment of each topic and to assign it a space valuation. Two supplementary methods have been employed. The first is to make a systematic analysis of a science or of a section of a science, e.g. anthropology, the labor problem, and to organize it in topics suitable for encyclopædia treatment. The other is to survey the various encyclopædias and other reference books, note the topics treated, the methods of treatment, the relation to other topics and the space. On the basis of such data we have made up cards indicating the character of article needed, the space required, cross references, et cetera. By comparison of the various topics we are able to determine how adequately each group covers its part of the field.

"We have already listed the more important topics throughout the work. For the early volumes much intensive work has been done, and we are confident that we have on our list nineteen-twentieths of the topics that will have to be treated.

"At the outset we classified our material as falling under the several sciences, economics, social psychology, et cetera, and tried to discover some rule of proportion for the distribution of space. In the actual presence of the material, classification and apportionment lose their definiteness and rigidity. Such a topic as wages, for example, may be classified as economic, but the method of treatment must involve statistical, historical and sociological methods. David Hume may be accredited to philosophy, but he is very important for political science and economics. Pyschological methods will have to be employed widely in political, social and economic topics. When the encyclopædia has been written, it is safe to say, no one will be able to determine what proportion of the total space has gone to one science, what proportion to another. We are trying to give each topic, wherever it falls, as adequate space as its importance and the nature of the material demand.

"A common method of hack reviewers of encyclopædias is to make comparison of the space accorded to articles of varying importance. If a topic of greater im-

portance receives less space than one of less importance, the editors are held guilty of the worst of editorial sins, lack of sense of proportion. In the actual practice of encyclopædia making, however, no such mechanical criterion is workable. Some very important topics can be treated adequately in relatively brief space, as, for example, the doctrine of sovereignty, which has been refined down to clear-cut principles. Such a topic as housing, on the other hand, involves a great deal of concrete material and requires much more space, relatively to its absolute importance.

"In the history of encyclopædia making, the problem of composition has been handled in three ways. (1) The bulk of the work has been done by the staff. (2) It has been assigned in large sections to editor-contributors, who have sublet the actual composition to others. (3) It has been distributed widely, each assignment being made directly from the central office. The last method is the most laborious, from the point of view of the staff. We, nevertheless, desire to follow it, for the following reasons:

"1. The importance of our enterprise consists not only in its result, but also in the process of its making. Those who collaborate with the staff in preparing the encyclopædia will join us in thinking through many of the problems of the relations of the sciences, of the evolution of social scientific ideas, et cetera. The more nearly we succeed in securing the co-operation of the whole body of social scientists, the greater value to social science of the work of preparing the encyclopædia.

"2. By distributing the work widely, with especial attention to the interests of each writer, we may hope that each article will be executed according to the best ability of the writer, instead of being treated as a hack job.

"For some months a part of our staff has been engaged in the search for possible writers. A systematic survey of the literature, both in book form and in the professional journals, is disclosing an extraordinary wealth of possible writers, both in this country and abroad, for most of the topics in the first volumes. We have supplemented these lists of writers by others derived from university catalogues, and are further supplementing them by suggestions from a great number of scholars. With the lists thus completed, we are confident that we shall be able to carry out successfully the plan of a wide distribution among writers specially trained and interested in the topics assigned.

"In order to protect ourselves against the danger of excessive diversity of form, we shall prepare a pamphlet for distribution among our writers, containing several specimen articles illustrating our methods of handling material, bibliography, et cetera. We have assembled the names of some eighty scholars whom we shall ask to prepare articles on topics that can be handled briefly. By comparison of the executed articles we shall be able to fix upon the form that is most appropriate to our needs, and to select specimen articles to serve roughly as models.

"In two or three months we expect to be in a position to assign for execution all the topics making up the first two volumes, with doubtless many related topics that will appear in later volumes. Six months ought to be a sufficient time allowance for the writers; two months additional for editorial revision and translation and three months for seeing the first volume through the press. Allowing a few months more for unforeseen contingencies, we may safely forecast the appearance of the first volume in the spring of 1929, a little less than two years from the time of the actual inception of the enterprise."

REPORT OF THE JOHN BATES CLARK FESTSCHRIFT COMMITTEE

The committee of the American Economic Association to commemorate the eightieth birthday of John Bates Clark begs to report as follows: When the committee considered the most appropriate way of celebrating the eightieth anniversary of the birthday of Professor John Bates Clark, it was mindful of the fact that a somewhat similar committee composed largely of his personal friends was preparing a testimonial dinner in his honor. Our committee therefore decided that the best plan would be to arrange for what the Germans call a *Festschrift* and for which we have unfortunately no corresponding name in English.

The committee delegated one of its own numbers, Professor Hollander, to act as editor in chief of the projected volume. No difficulty was encountered in securing contributions to the volume and in November, 1927, it appeared under the title of *Economic Essays contributed in honor of John Bates Clark.* The volume was published in behalf of the American Economic Association by the Macmillan Company.

Immediately after the annual meeting in Washington, which Professor Clark was unfortunately unable to attend, the committee met as a body and proceeded on January 2 to the residence of Professor Clark where a formal presentation of the volume was made. The inscription read: "To Professor John Bates Clark in grateful appreciation of his eminent contributions to economic science, this volume is presented in the name of the American Economic Association by the committee." The name of each member of the committee then followed.

The presentation speech was made by Professor Ely who spoke somewhat as follows:

"Our errand is a pleasant one. We come here representing your many friends in the American Economic Association to present to you a book written in honor of your eightieth birthday. This book we call a *Festschrift.* We are obliged to use a German word which is becoming English, if not already English. This is no memorial volume but it is a volume written to honor you while you are still active among us. We hope, indeed, that you have many years of unimpaired vigor before you to lead us in the development of economics in this country.

"This book is an evidence of the esteem in which we hold you. We admire you for your many years of constructive work during which you have held firmly to the highest ideals of scholarship. But your scholarship has not been cold and impersonal. You have been animated by that humanitarianism which characterizes modern economics. This was clearly brought out in your early book, *The Philosophy of Wealth.* What you there began you have continued because you laid in that book, as well as in your early articles, a firm foundation in conscientious, scholarly work. This stimulated your contemporaries and this is an inspiration to the younger generation who are following us.

"It has been my privilege to be long associated with you. We began work

in what now seem early days. I recall your co-operation in building up the American Economic Association in the days when it was relatively a very small affair. You have been a help to me as you have been to others. I will say this, furthermore, I can see in our early discussions that you have been in certain cases more nearly right than I, even if I am not prepared to admit that in some of the more important matters I was a hundred per cent wrong and you a hundred per cent right! This is not the time nor the place to enter into this. I simply want to acknowledge for my part the help which you have given to me and I am sure that many others can say what I am saying.

"I have belonged for a good many years to the Board of Directors of an investment company and at frequent intervals I have had to pass upon loans. We have always taken into account character and have done so to an extent that would doubtless surprise many young men if they knew the facts. I think character tells in scholarship as well as in practical affairs. It gives a basis for a singleness of purpose and continuity of effort. We all feel not only that you have been a help and an inspiration to us intellectually but also that the character which you display has been a contribution which we value highly.

"It is a privilege, then, with these few and inadequate remarks, to present to you this book on behalf of the committee here present and on behalf of the entire American Economic Association."

Professor Clark, who was in the best of health and spirits, was much touched and responded in a few well-chosen words. After the formal presentation Professor Clark in response to inquiries gave a most interesting account of his development as an economist and incidentally alluded to the fact that some of his early ideas were being worked out while he occupied a chair at Carleton College with a weekly requirement of twenty hours teaching and with the munificent annual salary of six hundred dollars. The committee urged Professor Clark to write a little autobiography which might explain more fully the genesis and development of his economic theories.

The committee, having completed the work assigned to it, would beg respectfully to be discharged.

EDWIN R. A. SELIGMAN, *Chairman*
RICHARD T. ELY
J. H. HOLLANDER
B. M. ANDERSON, JR.
J. M. CLARK

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Papers and Proceedings. Trend of Prices; Trend of Rate of Interest and Investment; Outlook for Wages and Employment; Overhead Costs; Commercial Rent and Profits; Labor Turnover; Factors in Wage Determinations; Income of Farmers; Large-Scale Production and Merchandising; Marketing Farm Products; Bureaus of Business Research. Pp. 293. 1.25

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The American Economic Review, **March, **June, September, and December; each, 1.25

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Supplement No. 2.—Handbook of the Association, 1924. 1.50

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The American Economic Review, March, June, September, and December; each, 1.25

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Publications of the American Economic Association

Volume XVII, 1927

The American Economic Review, March, June, September, and December; each, 1.25

Supplement.—Thirty-ninth Annual Meeting:
Papers and Proceedings. Economics of Prohibition; Economic History; Use of the Quantitative Method in the Study of Economic Theory; Present Day Corporation Problems; American Practices Analagous to Foreign Controls over Raw Materials; Marketing; Interest Theory and Price Movements; Problem of Effective Public Utility Regulation; Immigration Restriction—Economic Results and Prospects; Family Budgets; Motor Transportation in the United States. Pp. 218. 1.25

Supplement No. 2.—Report of the Dinner in Honor of Professor John Bates Clark. Pp. 18. .50

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Supplement No. 2.—Handbook of the Association, 1928. 2.00

The American Economic Association, founded, among other purposes, for "the encouragement of economic research" and "the encouragement of perfect freedom of economic discussion," has about three thousand members, including public and professional men and most of the leading students of political economy in America. Membership dues are five dollars a year. Each member receives all current reports and publications of the Association.

Address all orders for publications, applications for membership, and inquiries to the

SECRETARY OF THE AMERICAN ECONOMIC ASSOCIATION
Northwestern University, Evanston, Illinois.

The American Economic Review

Vol. XVIII, No. 2 SUPPLEMENT June, 1928

Handbook

of the

American Economic Association

1928

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Publication Offices: Menasha, Wisconsin, and Evanston, Illinois.
Subscriptions: American Economic Association, Northwestern University, Evanston, Illinois.

PRINTED BY
GEORGE BANTA PUBLISHING
COMPANY

AMERICAN ECONOMIC ASSOCIATION

The American Economic Association is an organization composed of persons interested in the study of political economy or the economic phases of political and social questions. As may been seen by examining the list of members and subscribers printed in this supplement, not only are all the universities and the most prominent colleges in the country represented in the Association by their teachers of political economy and related subjects, but a large number of members come from among business men, journalists, lawyers, men in public life, and others interested in the theories of political economy, or, more often, in their applications to social life. There are, further, over eight hundred subscribers, including the most important libraries of this country. The Association has besides a growing representation in foreign countries.

The annual meetings give opportunity for social intercourse; they create and cement acquaintanceship and friendship between teachers in different institutions, and bring into touch with each other students and business men interested in the social and economic problems of the day. The meetings aim to counteract any tendency to particularism which geographical separation and diverse interests might otherwise foster. The annual meeting for 1928 will be held in Chicago, Illinois, during the Christmas holidays.

The Publications of the Association, a complete list of which is printed at the end of this supplement, were begun in March, 1886. The first series of eleven volumes was completed by a general index in 1897. The second series, comprising two volumes, was published in 1897–1899, and in addition thereto the Association issued during 1896–1899 four volumes of *Economic Studies*. In 1900 a third series of Quarterly Publications was begun with the Papers and Proceedings of the Twelfth Annual Meeting, and was continued through 1910 with ample amount and variety of matter. *The Economic Bulletin*, issued quarterly and devoted to bibliography and current notes, was also published by the Association during the three years, 1908, 1909, and 1910.

In 1911 the Association began publishing the *American Economic Review*, a quarterly journal devoted to articles on economic subjects, reviews, abstracts of articles in current journals, and a classified bibliography of economic publications. During the eighteen years of its existence, the *Review* has made a place for itself among the scientific journals of the country.

The American Economic Association is the organ of no party, sect, or institution. It has no creed. Persons of all shades of economic opinion are found among its members, and widely different views are given a hearing in its annual meetings and through its publications.

With the exception of the editor of the *American Economic Review* and the Secretary-Treasurer, the officers of the Association receive no remuneration for their services. Its entire receipts are expended for the editing, printing, and circulation of the publications and for the annual meetings. Any member, therefore, may regard his annual dues either as a subscription to an economic publication, a payment for membership in a scientific association, or a contribution to a fund for publishing valuable papers on economic subjects.

CHARTER AND BY-LAWS OF THE AMERICAN ECONOMIC ASSOCIATION

The charter of incorporation of the American Economic Association, incorporated in the District of Columbia, February 3, 1923, provides as follows:

I. The name of title by which the society shall be known is the American Economic Association.

II. The time for which it is organized is perpetual.

III. The particular business and object of the society are as follows:

1. The encouragement of economic research, especially the historical study of the actual conditions of industrial life;

2. The issue of publications on economic subjects;

3. The encouragement of perfect freedom of economic discussion. The Association as such will take no partisan attitude, nor will it commit its members to any position on practical economic questions.

IV. The number of its trustees for the first year of its existence shall be fourteen.

The following by-laws have been adopted for the government of the Association:

I. Membership

1. Any person interested in economic inquiry may, on the nomination of a member, be enrolled in this Association.

2. There shall be four classes of members other than honorary; members paying an annual fee of $5.00; subscribing members paying an annual fee of $10.00; contributing members paying an annual fee of $25.00 or more; and life members comprising those members who contribute $200.00 or more in a single payment. Life members shall be exempt from annual fees. Members shall have each year the privilege of designating the class of membership they choose for that year.

3. Foreign economists of distinction, not exceeding twenty-five in number, may be elected honorary members of the Association.

4. Every member is entitled to receive, as they appear, all reports and publications of the Association.

II. Trustees

The trustees of this Association shall not be less than fourteen or more than fifteen in number, and the Board of Trustees shall be known as the Executive Committee. The Board of Trustees shall be composed of the persons elected as the Executive Committee at the time and place and in the manner set forth in the following by-law providing for the election of officers.

III. Officers

The officers of the Association, with the exception of Counsel, shall hereafter be elected at the annual meeting, and shall consist of a President, two Vice-Presidents, a Secretary, a Treasurer, and a Counsel, whose terms of office shall be one year; a Managing Editor whose term of office shall be three years; six members of the Editorial Board, six elected members of the Executive Committee, and three members of the Program Committee, whose terms of office shall be three years, and who shall be so classed that the term of one-third of the elected members of each committee and of the Editorial Board shall expire each year; provided that the office of Secretary and that of Treasurer may be filled by the same person. The Executive Committee shall consist of the President, the Vice-Presidents, the Secretary, the Treasurer, the Managing Editor, the three ex-Presidents who have last held office, and six elected members. The Counsel shall be elected by the Executive Committee and shall be a member of the bar of the District of Columbia. All officers shall hold office until their successors are chosen.

IV. Duties of Officers

1. The President of the Association shall preside at all meetings of the Association and of the Executive Committee, and in consultation with the Program Committee, shall prepare the programs for the annual meetings. In case of his disability, his duties shall devolve upon the Vice-Presidents in the order of their election, upon the Secretary, and upon the Treasurer.
2. The Secretary shall keep the records of the Association and perform such other duties as the Executive Committee may assign to him.
3. The Treasurer shall receive and have the custody of the funds of the Association, subject to the rules of the Executive Committee.
4. The Executive Committee shall have the control and management of the funds of the corporation. It may fill vacancies in the list of officers, and may adopt any rules or regulations for the conduct of its business not inconsistent with this constitution or with rules adopted at the annual meeting. It shall act as a committee on time and place of meetings and perform such other duties as the Association shall delegate to it. A quorum shall consist of five members.
5. The Editorial Board shall have charge of the publications of the Association. The Managing Editor shall be ex officio member and chairman of the Editorial Board.
6. The office of the corporation for legal purposes shall be at the office of the Counsel in the District of Columbia, and legal process against the corporation may be served on said Counsel.

V. Annual Meeting

The annual meeting of this corporation shall be held at such time and place as may be determined by the Executiv. Committee. Notice of such time and place shall ge given by publication in the regular journal of the corporation, now known as the *Am rican Economic Review*, at least ten days p ior to such meeting. The first annual meeting shall be held at Providence, Rhode Island, on the 27th of December, 1923, at nine o'clock A.M., unless otherwise ordered by the Executive Committee.

VI. Amendments

Amendments, after having been approved by a majority of the Executive Committee present at a meeting regularly called, may be adopted by a majority vote of the members present at any regular meeting of the Association.

LIST OF MEMBERS AND SUBSCRIBERS

*Life Members §Contributing Members #Subscribing Members
‡Honorary Members †Subscribers

Note—*The figures in parentheses after the name of a member indicate the year from which dates his continuous membership.*

†A. B. Gleerupska, Univ. Bokhandeln, Societe Anonyme, Lund, Sweden.
†Abbey Library, St. Benedict's College, Atchison, Kan.
†Abe, Ken'ichi No. 2862, Genzohara, Ohmori, near Tokyo, Japan.
Abbott, Donald P., 1135 E. Glisan St., Portland, Ore. (1925)
Abbott, Edith, Faculty Exchange, University of Chicago, Chicago, Ill. (1905)
Abbott, John B., Bellows Falls, Vt. (1927)
†Abo Academy Library, Abo, Finland.
Abrahamson, Albert, 521 Furnald Hall, Columbia University, New York City. (1927)
Achinstein, Asher, 1014 Park Pl., Brooklyn, N. Y. (1922)
Adams, Arthur B., University of Oklahoma, Norman, Okla. (1923)
Adams, James P., Brown University, Providence, R. I. (1921)
Adams, Leonard W., 1027 Granger Ave., Ann Arbor, Mich. (1927)
Adams, Thomas S., 115 Everit St., New Haven, Conn. (1900)
Adams, Walter S., 209 W. Iowa St., Urbana, Ill. (1926)
Adamson, Helen, 719 Sierra St., Reno, Nev. (1926)
Adler, Jack M., Box 1565, Los Angeles, Cal. (1927)
Agar, John G., 31 Nassau St., New York City. (1909)
Agger, Eugene E., Tenafly, N. J. (1902)
Aida, Iwao, Bureau of Banking, Treasury Dept., Tokyo, Japan. (1922)
Aikenhead, Grace A., W. T. Grant Co. Library, 455 7th Ave, New York City. (1928)
Aikin, Newton J., 2001 Monroe St., Pullman, Wash. (1927)
†Akademiska Bokhandeln, 7 Alexandersgatan, Helsingfors, Finland.
†Akerly, H. E., Board of Education, Municipal Bldg., Rochester, N. Y.
#Akerman, Clement, Reed College, Portland, Ore. (1914)
†Akron Public Library, Akron, Ohio.
†Aktiebolaget Nordiska Bokhandeln, Drottninggatan 7, Stockholm, Sweden.
†Alabama College Library, Montevallo, Ala.
†Alabama, University of, Business Library, University, Ala.
†Alabama, University of, Library, University, Ala.
†Alberta, University of, Library, Edmonton, South Alberta, Canada.
†Albion College Library, Albion, Mich.
Alden, Charles E., 1507 Crittenden St., N. W., Washington, D. C. (1923)
Alexander, Mary L., 383 Madison Ave., New York City. (1927)
†Alexander, Magnus W., 247 Park Ave. at 46th St., New York City.
†Alfred University Reading Room, Alfred, N. Y.
Alldredge, E. P., 161 8th Ave., N., Department of Survey, Nashville, Tenn. (1927)
†Allegheny College Library, Meadville, Pa.
Allen, Edward J., 110 Morningside Drive, New York City. (1922)
Allen, Frederick L., 55 Cedar St., New York City. (1909)
Allen, George H., New Bedford, Mass. (1887)
Allen, Harland H., 6104 Woodlawn Ave., Chicago, Ill. (1928)
Allen, Irving, 319 W. 18th St., New York City. (1927)
Allen, Ralph L., 53 Dudley St., Medford, Mass. (1928)
Allen, Robert M., 45 W. 76th St., New York City. (1919)

Allen, Ruth A., University Station, Austin, Texas. (1928)
Allinsmith, H. B., 27 Pine St., New York City. (1927)
†Alma College Library, Alma, Mich.
Altman, Blanche L., 561 Willard Pl., Evanston, Ill. (1924)
Altorfer, Henry W., 1303 E. Nebraska Ave., Peoria, Ill. (1928)
†Amalgamated Clothing Workers of America, 31 Union Sq., New York City.
Amano, T., Bank of Taiwan Ltd., Osaka, Japan. (1923)
†American Institute of Banking, N. Y. Chapter, The Library, 420 Lexington Ave., New York City.
†American Telephone and Telegraph Company, Dept. of Operation and Engineering, Room 1840, 195 Broadway, New York City.
†American Telephone and Telegraph Company, General Commercial Manager, Long Lines Dept., 15 Dey St., New York City.
†American Telephone and Telegraph Company, General Library, Comptrollers Dept., 195 Broadway, New York City.
†American Telephone and Telegraph Company, Library, Room 2427, 195 Broadway, New York City.
†Amherst College Library, Amherst, Mass.
Amos, H N., Banks Commercial College, 98 The Terrace, Wellington, New Zealand. (1922)
†Amoy, University of, Library, Amoy, China.
†Amtorg Trading Corporation, Book Dept., 165 Broadway, New York City.
§Andersen, Arthur E., 111 W. Monroe St., Chicago, Ill. (1913)
Anderson, Benjamin M., Jr., Chase National Bank, New York City. (1911)
Anderson, G. L., 210 Wisconsin St., Milwaukee, Wis. (1919)
Anderson, George W., 316 Federal Bldg., Boston, Mass. (1910)
Anderson, George W., William Penn Hotel, Whittier, Cal. (1926)
Anderson, Howard E , 942 Kishwaukee St., Rockford, Ill. (1927)
Anderson, Henry S., Box 83, Mayfield, Cal. (1925)
Anderson, Lawrence B., Guaranty Trust Company, 140 Broadway, New York City. (1924)
Anderson, Montgomery, College of Commerce and Journalsim, University of Florida, Gainsville, Fla. (1925)
Anderson, Paul R., 7108 Harvard Ave., Chicago, Ill. (1925)
Anderson, T. J., 1420 Laramie St., Manhattan, Kans. (1922)
†Andreeta and Rey Company, Calle Maipu No. 688, Buenos Aires, Argentine, South America.
Andrew, A. Piatt, Gloucester, Mass. (1896)
Andrew, Seymour L., American Telephone and Telegraph Co., 195 Broadway, New York City. (1918)
†Andrews Intitute for Girls, Economics Class, Willoughby, Ohio.
†Andrews Institute for Girls, Library, Willoughby, Ohio.
Andrews, Benjamin R., Teachers College, Columbia University, New York City. (1917)
Andrews, Champe S., P. O. Box 1004, New Haven, Conn. (1918)
Andrews, John B., 131 E. 23rd St., New York City. (1910)
Angell, James W., Columbia University, 514 Kent Hall, New York City. (1924)
Angus, William N., 254 Seaman Ave., New York City. (1921)
Ansted, Harry B., Wessington Springs Junior College, Wessington Springs, S. D. (1927)
Anthony, A. B., Hotel Bristol, St., Louis, Mo. (1923)
Anthony, Donald E., Box 124, Sunnyvale, Cal. (1923)
†Antioch College Library, Yellow Springs, Ohio.
Appleby, T. W., Ohio National Life Insurance Company, Cincinnati, Ohio. (1923)

Arado, Anthony D., 5042 Adams St., Austin Station, Chicago, Ill. (1926)
Arbuthnot, Charles C., 2263 Demington Drive, Cleveland, Ohio. (1904)
Arendtz, Hermann F., United Business Service, 210 Newbury St., Boston, Mass. (1927)
†Arizona, University of, Library, Tucson, Ariz.
†Arkansas State Teachers College Library, Conway, Ark.
†Arkansas, University of, School of Business Administration, Fayetteville, Ark.
Armstrong, Florence A., 643 W. Jefferson St., Tallahassee, Fla. (1923)
Armstrong, Floyd E., 387 Broadway, Cambridge, Mass. (1917)
*Armstrong, H. Clay, Jr., 1012 Palafax St., Pensacola, Fla. (1887)
Arndt, E. H. D., care of Dr. D. R. Craig, University of Pittsburgh, Pittsburgh, Pa. (1923)
Arndt, Karl M., University of Nebraska, Station A, Box 1281, Lincoln, Neb. (1925)
Arner, George B. L., Bureau of Vital Statistics, Dept. of Health, Harrisburg, Pa. (1910)
Arnold, John Knox, Federal Trade Commission, Washington, D. C. (1927)
Artaud, Theodore P., 807 Mills Bldg., Washington, D. C. (1928)
†(A.) Asher and Company, Behrenstrasse 17, Berlin, W. S., Germany.
Ashley, R. L., 685 Prospect Sq., Pasadena, Cal. (1911)
Atkins, Paul M., 5529 University Ave., Chicago, Ill. (1915)
Atkins, Willard E., Washington Square College, New York University, New York City. (1924)
Atterbury, Boudinot, Guaranty Company of New York, 140 Broadway, New York City. (1916)
Atwood, Albert W., The Highlands, Conn. Ave. and Cal. Street, Washington, D. C. (1912)
†Augustana College Library, Rock Island, Ill.
†Augustana College Library, Sioux Falls, S. D.
Auld, George P., 4 Kenmare Rd, Larchmont, N. Y. (1920)
Ault, Otho C., George Peabody College, Nashville, Tenn. (1920)
Austin, Charles B., 112 Cottage Ave., Mount Vernon, N. Y. (1911)
Austin, W. L., Bureau of the Census, Washington, D. C. (1924)
*Avery, Elroy M., Groton Bank, New Port Richey, Fla. (1893)
Avery, Harold G., Edgar, Neb. (1927)
Axe, Emerson W., 27 W. 44th St., New York City. (1921)
Ayres, Leonard P., Cleveland Trust Company, Cleveland, Ohio. (1921)
*Babson, Roger W., Babson Statistical Organization, Wellesley Hills, Mass. (1910)
Bacon, Dorothy C., Smith College, Northampton, Mass. (1926)
Bader, Louis, School of Commerce, New York University, Washington Square E., New York City. (1925)
Badger, John A., 7315 St. Charles Ave., New Orleans, La. (1916)
Badger, Ralph E., Dept. of Economics, Brown University, Providence, R. I. (1921)
Badulesco, Victor V., 14 rue Bis. Popa Chitu, Bucarest, Roumanie. (1926)
†(Joseph) Baer and Company, Hochstrasse 6, Frankfurt-Main, Germany.
Bagge, Gosta, Skinnarviksparken 33, Stockholm, Sweden. (1904)
Bailey, William B., 68 Niles Street, Hartford, Conn. (1901)
Baird, Frieda, Rockford College, Rockford, Ill. (1926)
Baird, Ralph P., Northwestern Bell Telephone Company, Omaha, Neb. (1922)
Baker, Carl O., High School, Stockton, Cal. (1926)
Baker, Mrs. Elizabeth F., Barnard College, Columbia University, New York City. (1921)
Baker, Ezra H., 294 Marlborough St., Boston, Mass. (1911)
Baker, Gladden W., 700 Main St., Hartford, Conn. (1919)
Baker, Hugh P., Trade Asso. Dept., U. S. Chamber of Commerce, Washington, D. C. (1918)

Baker, John C., Morgan Hall, Soldiers Field, Boston, Mass. (1928)
Baker, John W., 50 Broad St., New York City. (1911)
Baker, Oliver E., 4 Magnolia Parkway, Chevy Chase, Md. (1916)
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Baker, William B., Atlantic Ice and Coal Corp., Atlanta, Ga. (1909)
Balcom, Alfred B., Wolfville, N. S. (1914)
Baldwin, Charles E., Bureau of Labor Statistics, Washington, D. C. (1925)
*Baldwin, Summerfield, 1006 Charles St., Baltimore, Md. (1887)
Bancroft, E. Claire, Colgate University, Hamilton, N. Y. (1919)
Bancroft, J. R., 260 Tremont St., Boston, Mass. (1925)
Bane, Juliet L., 306 Norris Court, Madison, Wis. (1927)
†Bangor Public Library, Bangor, Maine.
Barber, Herbert L., 508 S. Dearborn St., Chicago, Ill. (1916)
Barbour, William T., Detroit Stove Works, Detroit, Mich. (1914)
Barkas, Benjamin W., 2532 S. Mildred St., Philadelphia, Pa. (1923)
Barker, Clare W., School of Com. and Fin., Indiana University, Bloomington, Ind. (1926
Barker, Howard F., Box 306, Riverdale, Md. (1928)
†Barnard College Library, Columbia University, New York City.
#Barnes, Charles M., Dept. of State, Washington, D. C. (1913)
Barnes, Horace R., Department of Economics and Business Adminstration, Franklin and Marshall College, Lancaster, Pa. (1923)
Barnett, George E., Johns Hopkins University, Baltimore, Md. (1901)
Barrett, Don Carlos, Haverford, Pa. (1895)
†Barrington Associates, Inc., 1 Park Ave., New York City.
Barrows, Emily, Wellesley College, Wellesley, Mass. (1928)
Barth, Carl G., 420 Whitney Ave., New Haven, Conn. (1918)
*Baruch, B. M., 598 Madison Ave., New York City. (1913)
‡Bastable, C. F., 52 Brighton Rd., Rathgar, Dublin, S. I., Ireland. (1926)
Batchelor, J. H., Arkansas Lumber Company, Box 466, Guthrie, Okla. (1914)
†Bates College Library, Lewiston, Maine.
†Batelle Ludwig and Company, Att: Mr. Weismann, 25 Broad St., New York City.
Battin, Charles T., 1221 N. Prospect St., Tacoma, Wash. (1926)
Bauer, John, 62 Montclair Ave., Montclair, N. J. (1910)
Baumert, Watson A., 1402 Lawrence St., Brookland, Washington, D. C. (1927)
Baumgartner, Grace, San Bernardino Valley Union Junior College, San Bernardino, Cal. (1924)
Bausman, R. O., 405 College Ave., Ithaca, N. Y. (1927)
#Baxter, Howard F., 747 Fountain St., N. E., Grand Rapids, Mich. (1925)
†Baylor University Library, Waco, Texas.
†Bayonne Free Public Library, Ave. C and 31st St., Bayonne, N. J.
Beach, Walter E., 167 Maine St., Brunswick, Me. (1926)
Beal, Thomas A., University of Utah, Salt Lake City, Utah. (1909)
Beales, Le Verne, 4124 Fifth St., N. W., Washington, D. C. (1925)
Bean, Donald P., 5750 Ellis Ave., Chicago, Ill. (1922)
Bean, Louis H., Bieber Bldg., Bureau of Agric. Economics, Washington, D. C. (1923)
Beardsley, Charles, Clarks, Neb. (1898)
Beatty, Willard C., Wesleyan Station, Middletown, Conn. (1923)
Beck, Mrs. B. C., 202 Olympic Pl., Seattle, Wash. (1921)
Beckhart, B. H., 406 School of Business, Columbia University, New York City. (1922)
Beckman, Theodore N., College of Commerce and Journalism, Ohio State University, Columbus, Ohio. (1921)

Beckner, Earl R., Butler University, Indianapolis, Ind. (1924)
†Bedford College for Women, The Librarian, Regents Park, London, N. W., England.
Behrens, Carl F., University of Detroit, School of Commerce and Finance, Detroit, Mich. (1927)
Behrens, O. W., 1425 University Ave., Minneapolis, Minn. (1927)
Belcher, Alice E., Milwaukee Downer College, Milwaukee, Wis. (1910)
Belcher, Donald R., 195 Broadway, New York City. (1921)
Belden, Mabel, Keuka College, Keuka Park, N. Y. (1927)
Belknap, William B., Land-o-Goshen, Goshen, Ky. (1915)
*Bell, James C., Jr., 930 Park Ave., New York City. (1922)
Bell, J. F., 1002 S. Lincoln Ave., Urbana, Ill. (1927)
Bell, James W., 1745 Chicago Ave., Evanston, Ill. (1916)
Bell, Raymond E., 250 W. 57th St., New York City. (1924)
Bell, Spurgeon, Ohio State University, Bureau of Business Research, Columbus, Ohio. (1925)
†Bell Telephone Manufacturing Company, 18 rue Boudewysn, Antwerp, Belgium.
Beller, William F., 51 E. 123rd St., New York City. (1892)
†Bellingham Bay Public Library, Bellingham, Wash.
†Beloit College Library, Beloit, Wis.
†Bemis Industries, Inc., P. O. Box 5173, Boston, Mass.
Bemis, Edward W., Bemis Company, Room 601, 332 S. Michigan Ave., Chicago, Ill. (1886)
†Benares Hindu University Library, Benares, India.
Benedict, Leray D., 508 Lynn Ave., Ames, Iowa. (1927)
†Benedictusverlag Schmid and Cie., Cas. post. 10703, Rorschach, Switzerland.
Beneke, Herman H., Miami University, Oxford, Ohio. (1920)
Benner, Claude L., Economics Department, University of Delaware, Newark, Del. (1922)
Bennett, Russell W., Realty Bldg., Jacksonville, Fla. (1924)
Bennett, William W., Union College, Schenectady, N. Y. (1921)
Bennison, J. J., Labour Statistics Bureau, Secretariat, Rangoon, Burma. (1926)
Benton, Alva H., North Dakota Agricultural College, Agricultural College, N. D. (1922)
Berglund, Abraham, University of Virginia, University, Va. (1906)
†Berkeley, R. F., 133 Montgomery St., San Francisco, Cal.
Berman, Edward, 319 Commerce Bldg., University of Illinois, Urbana, Ill. (1922)
Bernander, Harold, 923 Belden Ave., Chicago, Ill. (1928)
Bernays, Edward L., 9 E. 46th St., New York City. (1926)
Bernhardt, Joshua, Palestine Economic Corp., Inc., 40 Exchange Pl., New York City. (1920)
Bernheim, Alfred L., 27 W. 86th St., New York City (1924)
Bernheim, George B., Ferry Street and Willow Avenue, Hoboken, N. J. (1916)
Bernheim, Isaac W., 28th and Broadway, Louisville, Ky. (1910)
Bernheimer, Charles S., 320 W. 89th St., New York City. (1910)
Bernstein, Arthur R., 801 Olive St., Scranton, Pa. (1928)
Bernstein, Theodore, 100 Broadway, New York City. (1927)
Bernstein-Kohan, S. V., Great Novinsky St. 3, Apt. 13, Moscow, U. S. S. R. (1927)
Berolzheimer, Howard, 1812 Chicago Ave., Evanston, Ill. (1927)
Berridge, William A., Metropolitan Life Insurance Company, 1 Madison Ave., New York City. (1921)
Berry, Thomas L., Baltimore Audit Company, 901 Calvert Bldg., Baltimore, Md. (1910)
Bess, W. G., Leetonia, Ohio. (1911)
Best, Harry, University of Kentucky, Lexington, Ky. (1919)
†Bethany College Library, Lindsborg, Kan.

Bethke, William, La Salle Extension University, 4046 Michigan Ave., Chicago, Ill. (1919
Bettman, Alfred, 1514 First National Bank Bldg., Cincinnati, Ohio. (1914)
Bexell, J. A., School of Commerce, Oregon Agricultural College, Corvallis, Ore. (1922)
Bezanson, Anna, Room 26, 3440 Walnut St., Philadelphia, Pa. (1918)
†Biblioteca dell'Universita, Cattolica del Sacro Curore, Via S. Agnese nr. 4, Milano (108), Italy.
†Biblioteca Ministero Economia Nazionale, Via XX Settembre, Rome, Italy.
†Biblioteka Gosplan, Vozdvizhenka 5, Moscow, Russia.
†Bibliotequf Centrale, Delovi Place Noguine, Moscow, Russia.
†Bibliothek der Nederlandsche Handels-Hoogschool, Rotterdam, Holland.
†Bibliotheque de l'Universite, 11 Place Carnot, De Nancy (et M.), France.
†Bibliotheque Publique et Universitaire, Geneva, Switzerland.
Bice, Hubert E., 1040 Westmoreland Ave., Syracuse, N. Y. (1917)
Bickelhaupt, Carroll O., 195 Broadway, New York City. (1924)
Bickerdike, Charles F., Hillsted, Hengrave Rd., Forest Hill, London, S. E., England (1913)
Bickley, John H., Public Service Commission, 1517 Continental Bldg., Baltimore, Md. (1922)
Biddle, Clinton P., 225 Brattle St., Cambridge, Mass. (1925)
Bidgood, Lee, University, Ala. (1911)
Bidwell, Percy W., 40 rue du Lac, U. S. Tariff Commission, Brussels, Belgium. (1912)
Bidwell, Raymond A., 16 Ridgewood Terrace, Springfield, Mass. (1910)
†Bierce Library, Municipal University of Akron, Akron, Ohio.
Bigelow, Chester W., New England National Bank and Trust Company, Kansas City, Mo. (1921)
Bigelow, Howard F., Western State Normal, Kalamazoo, Mich. (1927)
Bigelow, Karl W., 1200 Massachusetts Ave., Cambridge 38, Mass. (1925)
Bigge, George E., Brown University, Providence, R. I. (1925)
Bigham, Truman C., University of Arkansas, Fayetteville, Ark. (1928)
Bilgram, Hugo, 1235 Spring Garden St., Philadelphia, Pa. (1887)
Binder, Rudolph M., 366 Prospect Street, E. Orange, N. J. (1911)
*Bing, Alexander M., 587 Fifth Ave., New York City. (1919)
Binkerd, Robert S., J. H. Oliphant and Company, 61 Broadway, New York City. (1918)
Bird, Francis H., College of Engineering and Commerce, University of Cincinnati, Cincinnati, Ohio. (1909)
†Birmingham Public Library, Birmingham, Ala.
Bishop, Avard L., Yale University, New Haven, Conn. (1909)
#Bishop, George L., 68 Devonshire St., Boston, Mass. (1913)
Bittner, G. E., Apt. 33, 1627 Lamont St., N. W., Washington, D. C. (1926)
Bivins, Percy A., 74 Park Ave., Passaic, N. J. (1926)
*Bixby, William H., 1709 Lanier Pl., N. W., Washington, D. C. (1888)
Bizzell, William B., University of Oklahoma, Norman, Okla. (1924)
Black, Albert G., Division of Agricultural Economics, University Farm, St. Paul, Minn. (1925)
Black, John D., Widener W., Harvard University, Cambridge, Mass. (1919)
Blackett, Olin W., University of Michigan, Ann Arbor, Mich. (1919)
Bladen, Vincent W., Hart House, Toronto, Ontario, Canada. (1924)
Blaine, Mrs. Emmons, 101 E. Erie St., Chicago, Ill. (1910)
Blair-Smith, H., 195 Broadway, New York City. (1915)
Blake, Edwin M., Drawer A, Pratt Station, Brooklyn, N. Y. (1909)
Blakey, Roy G., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1912)

Blanchard, Ralph H., Columbia University, New York City. (1912)
#Blanchet, J. U., 290 Potter Pl., Weehawken, N. J. (1919)
Bliss, Z. W., Box 156, Providence, R. I. (1912)
Blood, John B., 11 E. 36th St., New York City. (1917)
Blough, J. Roy, 2605 Stevens St., Madison, Wis. (1924)
Blue, Frederick K., 1569 Masonic Ave., San Francisco, Cal. (1914)
†Bluefield Colored Institute, Bluefield, W. Va.
†Bluffton College Library, Bluffton, Ohio.
Boardman, Kenneth S., Morgan Hall, Soldiers Field, Boston, Mass. (1927)
Bobb, Dwight S., 231 S. La Salle St., Chicago, Ill. (1912)
Bober, Mandell M., Lawrence College, Appleton, Wis. (1927)
Bodell, J. J., 215 Arlington Ave., Providence, R. I. (1917)
Bodfish, H. Morton, 337 E. Chicago Ave., Chicago, Ill. (1926)
Bodine, Samuel T., Broad and Arch Sts., Philadelphia, Pa. (1897)
Boettiger, Louis A., 826 Alton St., Appleton, Wis. (1924)
Boettler, Herbert F., 7401 Clayton Rd., St. Louis, Mo. (1922)
Bogart, Ernest L., 1101 W. California St., Urbana, Ill. (1897)
Bogen, Jules I., 315 W. 94th St., New York City. (1925)
Boggs, Theodore H., University of British Columbia, Vancouver, B. C. (1911)
Bohlman, Herbert W., 1000 Twentieth St., Des Moines, Iowa. (1924)
Bohmfalk, J. F., 8 Warren St., New York City. (1928)
†Bolger, William A., Main Bldg., University of Notre Dame, Notre Dame, Ind.
Bolles, Albert S., Williamstown, Mass. (1886)
†Bombay, University of, Secretary, School of Economics and Sociology, Bombay, India.
‡Bonar, James, 13 Redington Rd., Hampstead, London, N. W. 3, England. (1924)
Bonbright, James C., School of Business, Columbia University, New York City. (1915)
Bond, Jesse H., 1509 University Ave., Grand Forks, N. D. (1923)
Bonneville, Joseph H., 812 Springfield Ave., Cranford, N. J. (1921)
*Bonwit, Paul J., Fifth Ave. and 38th St., New York City. (1916)
Boody, R. Elizabeth, Vassar College, Poughkeepsie, N. Y. (1927)
Boone, Gladys, 411 W. 116th St., New York City. (1928)
Boothe, Viva, Elmira College, Elmira, N. Y. (1928)
Borak, Arthur, School of Business Administration, University of Minnesota, Minneapolis, Minn. (1927)
Borden, Neil H., Morgan Hall, Soldiers Field, Boston, Mass. (1925)
Borden, William, Platteville State Normal School, Platteville, Wis. (1923)
Borg, Sidney C., Hotel Chatham, Vanderbilt Ave. and 48th St., New York City. (1901)
Born, Charles E., University of Buffalo, 3425 Main Street, Buffalo, N. Y. (1928)
Bosland, Chelcie C., 1116 5th St., S. E., Minneapolis, Minn. (1925)
†Boston Athenaeum, 10½ Beacon St., Boston, Mass.
†Boston Public Library, Copley Sq., Boston 17, Mass.
†Boston University, Business Administration Library, 525 Boylston St., Boston, Mass.
Boswell, James L., Collegeville, Pa. (1925)
†Bosworth, Neil, 744 Highland Ave, Elgin, Ill.
Boucke, O. Fred, State College, Pa. (1911)
Boudin, Louis B., 70 W. 40th St., New York City. (1912)
Boughter, Isaac F., 907 Short Ave., Fairmont, W. Va. (1924)
†Bowdoin College Library, Brunswick, Me.
*Bowen, Clarence W., 5 E. 63rd St., New York City. (1886)
Bowen, Ezra, Sullivans' Lane, Easton, Pa. (1914)
Bowen, J. Chester, Bureau of Labor Statistics, Washington, D. C. (1901)

Bowers, Edison L., 1202 Fairview Ave., Columbus, Ohio. (1923)
Bowers, John W., 131 State St., Portland, Me. (1909)
*Bowker, Richard R., 62 W. 45th Street, New York City. (1887)
Bowman, Clelland A., Albright College, Myerstown, Pa. (1924)
Boyd, George A., 80 Maiden Lane, New York City. (1927)
Boyden, Roland W., 50 Federal St., Boston, Mass. (1909)
Boyle, James E., Agricultural College, Cornell University, Ithaca, N. Y. (1905)
Boynton, Arthur J., 1125 W. Campus Rd., Lawrence, Kansas. (1908)
Bradford, Ernest S., 12 Argyle Ave., New Rochelle, N. Y. (1920)
Bradford, Frederick A., Sayre Apts., 3rd and Wyandotte, Bethlehem, Pa. (1923)
Bradley, Harry, Allen-Bradley Company, Milwaukee, Wis. (1918)
Bradley, Richard M., 60 State St., Boston, Mass. (1912)
Bradshaw, Frederic H., Thompson Ross and Co., 29 S. La Salle St., Chicago, Ill. (1928
†Bradshaw, Ffrederick, The Library, Armstrong College, Newcastle on Tyne, England.
Brady, Alexander, University of Toronto, Toronto, Ont., Canada. (1928)
Brady, Arthur W., Indiana Union Traction Co., Anderson, Ind. (1909)
Brady, Robert A., Washington Square College, New York University, Washington Square East, New York City. (1928)
Braley, Henry K., 151 Kilsyth Rd., Boston, Mass. (1910)
Brand, Charles J., 616 Investment Bldg., Washington, D. C. (1914)
Brandenburg, S. J., Clark University, Worcester, Mass. (1912)
Brandt, Harry J., Room 315, 195 Broadway, New York City. (1912)
Brannen, Claude O., University of Arkansas, Dept. of Rural Econ. and Soc., Fayetteville, Ark. (1928)
Braun, Elmer W., Agric. Extension Division, University of California, Berkeley, Cal. (1927)
Bray, G. A., 212 W. Washington St., Chicago, Ill. (1927)
Breckenridge, S. P., Green Hall, University of Chicago, Chicago, Ill. (1909)
Breedlove, J. P., Duke University Library, Durham, N. C. (1904)
‡Brentano, L., Universitatzu Munich, Munich, Germany. (1926)
Breyer, Ralph F., 4224 Osage Ave., Philadelphia, Pa. (1921)
Brigden, J. B., University of Tasmania, Hobart, Tasmania. (1925)
Briggs, Alfred W., 431 Hawthorne Court, Madison, Wis. (1925)
Briggs, Leland L., Burlington, Vt. (1925)
Bright, Stanley, Cedar Hill Farm, R. F. D. 2, Reading, Pa. (1916)
Brindley, John E., Iowa State College, Ames, Iowa. (1908)
Brisco, Norris A., New York University, Washington Sq., New York City. (1906)
Brissenden, Paul F., Columbia University, New York City. (1921)
†British Columbia, University of, Library, Point Grey, B. C.
Broda, R., Yellow Springs, Ohio. (1926)
Broderick, J. Joyce, British Embassy, Washington, D. C. (1920)
†(Silas) Bronson Library, Lindsey Brown, Librarian, Waterbury, Conn.
†(Robert) Brookings Graduate School of Economics and Government, 1724 I. St., N. W., Washington, D. C.
Brookings, Robert S., Samuel Cupples W. W. Co., St. Louis, Mo. (1910)
†Brookmire Economic Service, 570 7th Ave., New York City.
Brooks, Charles E., 613 Beaver Insurance Bldg., Monona Ave., Madison, Wis. (1916)
Brooks, Howard A., Blinn Memorial College, Brenham, Texas. (1927)
Brooks, John G., 8 Francis Ave., Cambridge, Mass. (1887)
Brooks, R. P., School of Commerce, University of Georgia, Athens, Ga. (1920)
†Brown University Library, Providence, R. I.

BROWN, C. K., Davidson College, Davidson, N. C. (1928)
BROWN, CHARLES W., Frick Bldg., Pittsburgh, Pa. (1912)
BROWN, DICKSON Q., 11 Broadway, New York City. (1912)
BROWN, DOUGLAS V., Massachusetts 4, Cambridge, Mass. (1928)
BROWN, EMILY C., 3027 Pleasant Ave., Minneapolis, Minn. (1927)
BROWN, ELMER J., University of Arizona, Tucson, Ariz. (1911)
BROWN, ERNEST S., 539 W. 6th St., Reno, Nev. (1926)
BROWN, FRANKLIN Q., 33 Pine St., New York City. (1911)
BROWN, HARRY G., 203 S. Garth Ave., Columbia, Mo. (1909)
BROWN, HERBERT J., Berlin Mills Company, Portland, Me. (1909)
BROWN, JACOB F., 274 Summer St., Boston, Mass. (1909)
BROWN, JAMES D., 26 Murray Pl., Princeton, N. J. (1925)
BROWN, LATHROP, St. James, N. Y. (1921)
BROWN, LYNDON O., University of Detroit, School of Commerce and Finance, Detroit, Mich. (1928)
BROWN, PEMBROKE H., 302 Commerce Bldg., Urbana, Ill. (1917)
BROWN, PHILIP M., 64 Charles Field St., Providence, R. I. (1925)
BROWN, THEODORE H., 25 Meadow Way, Cambridge, Mass. (1921)
BROWN, WILLIAM A., JR., 49 E. 80th St., New York City. (1926)
BROWN, WILLIAM H., Department of Economics, Lafayette College, Easton, Pa. (1923)
BROYLES, OWEN, 826 University Ave., Reno, Nev. (1926)
#BRUMMER, LEON, 171 Madison Ave., New York City. (1901)
BRYAN, MALCOLM H., 5646 Maryland Ave., Chicago, Ill. (1925)
#BRYANT, EDWARD S., The Harvard Club, Boston, Mass. (1912)
†BRYN MAWR COLLEGE LIBRARY, Bryn Mawr, Pa.
‡BUCHER, L., Universitatzu Leipzig, Leipzig, Germany. (1926)
†BUCK MEMORIAL LIBRARY, Illinois Wesleyan University, Bloomington, Ill.
BUCK, NORMAN S., Yale Station, New Haven, Conn. (1920)
BUCKHOUS, M. GERTRUDE, University of Montana, Missoula, Mont. (1909)
BUCKMINSTER, WILLIAM R., 450 Tremont Bldg., Boston, Mass. (1913)
†BUCKNELL UNIVERSITY LIBRARY, Lewisburg, Pa.
BUDD, THOMAS A., Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1925)
BUECHEL, F. A., 1412 Euclid St., Washington, D. C. (1921)
BUEHLER, ALFRED G., 199 King St., Burlington, Vt. (1925)
†BUFFALO PUBLIC LIBRARY, Buffalo, N. Y.
†BUFFALO, UNIVERSITY OF, LIBRARY, 3435 Main St., Buffalo, N. Y.
BULLIS, HARRY A., Washburn Crosby Company, Minneapolis, Minn. (1927)
BULLOCK, CHARLES J., Harvard University, Cambridge, Mass. (1894)
BULLOCK, THEODORE T., 2420 R., Lincoln, Neb. (1913)
BURBANK, HAROLD H., 1 Waterhouse St., Cambridge, Mass. (1909)
BURDICK, RAYMOND T., Colorado Agricultural College, Fort Collins, Colo. (1923)
†BUREAU OF AGRICULTURAL ECONOMICS, U. S. Department of Agriculture, Washington, D. C.
BURGESS, ERNEST W., University of Chicago, Chicago, Ill. (1914)
BURGESS, EUGENE W., 112 Commerce Bldg., University of Illinois, Urbana, Ill. (1928)
BURGESS, GEORGE S., Claremont, Cal. (1922)
BURGESS, KENNETH F., 547 W. Jackson Blvd., Chicago, Ill. (1922)
BURGESS, ROBERT W., Western Electric Company, 195 Broadway, New York City. (1924)
BURGESS, W. RANDOLPH, Federal Reserve Station, 33 Liberty St., New York City. (1924)
BURKE, WILLIAM F., 66 Oak St., Naugatuck, Conn. (1923)
BURKMAN, FRANK M., 410 S. Sheridan Ave., Apt. 4, Tacoma, Wash. (1923)
†BURMA BOOK CLUB, Ltd., P. O. Box 1068, University College, Rangoon, Burma.

BURNS, MRS. E. M., Rockefeller Memorial, 61 Broadway, New York City. (1925)
BURR, SUSAN S., 2011 Eye St., N. W., Washington, D. C. (1927)
BURTCHETT, FLOYD F., Department of Economics, University of California at Los Angele Los Angeles, Cal. (1925)
#BURTON, CHARLES L., 160 Yonge St., Toronto, Canada. (1928)
*BUSH, IRVING T., 100 Broad St., New York City. (1911)
BUSH, W. T., Columbia University, New York City. (1917)
BUSHEE, FREDERICK A., 1207 Aurora Ave., Boulder, Colo. (1914)
†BUSINESS BRANCH OF THE LIBRARY, 34 Commerce St., Newark, N. J.
†BUTLER COLLEGE LIBRARY, Indianapolis, Ind.
BUTLER, WILLIAM, Fisher Body Corporation, Detroit, Mich. (1920)
BUTT, WILLIAM E., 110 W. Nittany Ave., State College, Pa. (1922)
BUTTERFIELD, KENYON L., East Lansing, Mich. (1903)
BYE, RAYMOND T., University of Pennsylvania, Philadelphia, Pa. (1920)
BYERS, ISAAC W., Iron River, Mich. (1916)
BYRNE, JOHN M., University Club, Cincinnati, Ohio. (1926)
CABLE, J. RAY, Washington University, St. Louis, Mo. (1922)
CADY, GEORGE J., 1218 Elmwood Ave., Evanston, Ill. (1927)
CAHN, RUEBEN D., 2554 E. 76th St., Chicago, Ill. (1925)
CAIRNS, ANDREW, Canadian Co-operative Wheat Producers, Ltd., Electric Chambers, Winnipeg, Manitoba, Canada. (1927)
CALDER R. J., International Creosoting and Construction Company, Galveston, Texas. (1917)
CALHOUN, CHARLES P., 15 E. 26th St., Ronald Press Company, New York City. (1923)
†CALIFORNIA STATE LIBRARY, Sacramento, Cal.
†CALIFORNIA, UNIVERSITY OF, LIBRARY, Berkeley, Cal.
†CALIVORNIA, UNIVERSITY OF, Economics Department, 21 Wheeler Hall, Berkeley, Cal.
†CALIFORNIA, UNIVERSITY OF, at Los Angeles, Los Angeles, Cal.
CALMAN, HENRY L., 42-25 Vernon Blvd., Long Island City, N. Y. (1912)
CALVERT, JOSEPH F., 2 E. 23rd St., New York City. (1908)
CALVERTON, V. F., P. O. Box 322, Baltimore, Md. (1928)
CAMPBELL, CARLOS E., Department of Rural Economics, University of Arkansas, Fayetteville, Ark. (1927)
CAMPBELL, GEORGE W., 5406 Harper Ave., Chicago, Ill. (1926)
CAMPBELL, JOHN A., 379 W. State St., Trenton, N. J. (1915)
CAMPBELL, ROBERT A., Vanderbilt University, Nashville, Tenn. (1908)
†CANADIAN BANK OF COMMERCE, Head Office, Toronto, Ontario, Canada.
CANCE, ALEXANDER E., Massachusetts Agricultural College, Amherst, Mass. (1908)
#CANFIELD, A. J., 40 Inman St., Cambridge, Mass. (1918)
‡CANNAN, EDWIN, 11 Chadlington Rd., Oxford, England. (1927)
CANNING, JOHN B., Box 76, Stanford University, Cal. (1920)
†CAPE TECHNICAL COLLEGE, Longmarket St., Cape Town, So. Africa.
CAPEN, EDWARD W., 80 Sherman St., Hartford, Conn. (1906)
†CAPITAL UNIVERSITY LIBRARY, Columbus, Ohio.
*CAPP, SETH B., P. O. Box 2054, Philadelphia, Pa. (1912)
CARBO, LUIS A., Casilla No. 15, Guayaquil, Ecuador, S. A. (1927)
CAREY, MATTHEW, Genesee Bank Bldg., Flint, Mich. (1916)
†CARLETON COLLEGE LIBRARY, Northfield, Minn.
CARLSON, AVERY L., 3017 Tomlinson St., Fort Worth, Texas. (1923)
CARLSON, GLEN E., Rollins College, Winter Park, Fla. (1926)
CARLTON, FRANK T., Case School of Applied Science, Cleveland, Ohio. (1906)

Carmichael, Fitzhugh L., School of Commerce, 2011 Glenarm, Denver, Colo. (1927)
†Carnegie Endowment for International Peace, 2 Jackson Pl., Washington, D. C.
†Carnegie Free Library, Ogden, Utah.
†Carnegie Free Library of Allegheny, Pittsburgh, Pa.
†Carnegie Library, State Normal School, Athens, Ga.
†Carnegie Library, Atlanta, Ga.
†Carnegie Library, Agnes Scott College, Decatur, Ga.
†(Margaret) Carnegie Library, Mills College, Cal.
†Carnegie Library, Oklahoma City, Okla.
†Carnegie Library, San Antonio, Texas.
†Carnegie Library, Periodical Division, Schenley Park, Pittsburgh, Pa.
†Carnegie Public Library, Conneaut, Ohio.
†Carnegie Public Library, Fort Worth, Texas.
†Carnegie Public Library, Laramie, Wyo.
Carothers, Neil, Lehigh University, Bethlehem, Pa. (1927)
Carpenter, Charles G., 9313 Montgomery Ave., North Chevy Chase, Md. (1924)
Carpenter, Niles, 196 Lisbon Ave., Buffalo, N. Y. (1915)
Carpenter, Raymond V., Metropolitan Life Insurance Company, 1 Madison Ave., New York City. (1917)
Carpenter, William M., 272 N. Mountain Ave., Upper Montclair, N. J. (1926)
Carr, James A., 1304 Central National Bank Bldg., St. Louis, Mo. (1911)
Carroll, Dudley D., Chapel Hill, N. C. (1916)
Carroll, Jean F., 1137 36th St., Des Moines, Iowa. (1925)
Carroll, J. Murray, 143 Wood St., Lewiston, Me. (1913)
Carroll, Mollie R., Goucher College, Baltimore, Md. (1922)
Carrothers, William A., University of Saskatchewan, Saskatoon, Saskatchewan, Canada. (1922)
Carson, William J., 1724 Eye St., N. W., Washington, D. C. (1924)
Carter, William A., 308 Thilly Ave., Columbia, Mo. (1928)
Caruba, Robert, 425 N. 7th St., Newark, N. J. (1923)
Carver, Thomas N., 7 Kirkland Rd., Cambridge, Mass. (1893)
Casassa, C. S., Pacific Telephone and Telegraph Company, 140 New Montgomery St., San Francisco, Cal. (1915)
Case, H. C. M., Department of Farm Organization and Management, University of Illinois, Urbana, Ill. (1919)
Case, Mills E., 24 Broad St., New York City. (1910)
Case, Walter J., 60 Beaver St., New York City. (1924
Cassels, John M., University of Alberta, Edmonton, Alberta, Canada. (1928)
†Casteleiro, Segundo J., P. O. Box 300, Havana, Cuba.
Castenholz, W. B., 4101 S. Michigan Ave., La Salle Extension University, Chicago, Ill. (1924)
Catchings, Waddill, 30 Pine St., New York City. (1917)
†Catholic University of America, Library, Washington, D. C.
Catlin, Warren B., Bowdoin College, Brunswick, Me. (1909)
Cator, George, 803 St. Paul St., Baltimore, Md. (1901)
Caverly, Harcourt L., Apt. B-4, 619 E. University St., Ann Arbor, Mich. (1920)
†Cease, D. L., 820 Superior Ave., Cleveland, Ohio.
†Cedar Rapids Public Library, Cedar Rapids, Iowa.
Ceder, Georgiana D., 5417 Wayne Ave., Chicago, Ill. (1928)
†Central College Library, Central College, Fayette, Mo.
†Central State Normal School Library, Edmond, Okla.

†CENTRE COLLEGE, Danville, Ky.
CHADDOCK, ROBERT E., Fayerweather Hall, Columbia University, New York City. (1909)
CHALMERS, HENRY, Bureau of Foreign and Domestic Commerce, Washington, D. C. (1918)
CHAMBERLIN, EDWARD H., 37 Wendell St, Cambridge, Mass. (1928)
CHAMBERS, RAYMOND, Science Hall, University of Buffalo, Buffalo, N. Y. (1922)
CHANDLER, HENRY A. E., 9 Park St., Norwalk, Conn. (1909)
CHANDLER, R. A., Sylvania, Ohio. (1923)
CHANG, S. H. M., 3741 Walnut St., W. Philadelphia, Pa. (1925)
CHANTER, WILLIAM G., 13 Fisk Hall, Middletown, Conn. (1922)
CHAO, NAI-TUAN, Box 438, Teachers College, Columbia University, New York City. (1925)
CHAPLIN, JOHN M., 11620 Longwood Drive, Chicago, Ill. (1924)
CHAPMAN, HERMAN H., University, Ala. (1922)
CHAPMAN, JOHN M., Furnald Hall, Columbia University, New York City. (1920)
CHAPMAN, PHILIP F., Chapman National Bank, 185 Middle St., Portland, Me. (1917)
CHAPMAN, WILLIAM P., JR., 154 Nassau St., New York City. (1910)
CHARTERS, WERRETT W., University of Chicago, Chicago, Ill. (1926)
CHASE, CHARLES H., 96 W. 9th Ave., Columbus, Ohio. (1916)
CHASE, SIMEON B., King Philip's Mills, Fall River, Mass. (1890)
†CHATTANOOGA, UNIVERSITY OF, Chattanooga, Tenn.
CHEEK, ROSS W., 55 15th Ave., Columbus, Ohio. (1912)
CHENEY, COLEMAN B., Skidmore College, Saratoga Springs, N. Y. (1928)
CHERINGTON, PAUL T., 159 Park Ave., Greenwich, Conn. (1909)
CHERRINGTON, HOMER, Ohio University, Athens, Ohio. (1923)
†CHICAGO PUBLIC LIBRARY, Chicago, Ill.
†CHICAGO TRIBUNE LIBRARY, Chicago, Ill.
†CHICAGO, UNIVERSITY OF, General Library, Chicago, Ill.
†CHIEF, DIVISION OF ECONOMICS, MARKETS AND CO-OPERATION, Department of Agriculture, Pretoria, South Africa.
†CHIEF, SECTION OF STATISTICS, Office of the Secretary, Room 257, Treasury Bldg., Washington, D. C.
†CHIEF STATISTICIAN, Department of Labor, Albany, N. Y.
CHILDS, JAMES B., Library of Congress, Division of Documents, Washington, D. C. (1925)
†CHINA FOUNDATION FOR THE PROMOTION OF EDUCATION AND CULTURE, 22 Nan Chang Chieh, Peking, China.
CHINLUND, EDWIN F., 41 Broad St., New York City. (1924)
CHISHOLM, ARCHIBALD M., 605 Sellwood Bldg., Duluth, Minn. (1916)
†CHOSAKA, South Manchuria Railway Company, Dairen, Manchuria, China.
†CHOSEN CHRISTIAN COLLEGE, Seoul, Korea.
†CHOSEN, GOVERNMENT GENERAL OF, (Chosen-Sotokufu-Toshokan), Keijo, Chosen, Japan.
CHRISTENSON, CARROLL L., 5659 Woodlawn Ave., Chicago, Ill. (1925)
†CHU, C. H., 79 Racecourse Rd., Tientsin, North China.
†CHUO-DAIGAKU-TOSHOKWAN, Kanda, Tokyo, Japan.
†CINCINNATI PUBLIC LIBRARY, Cincinnati, Ohio.
†CINCINNATI, UNIVERSITY OF, LIBRARY, Burnett Woods Park, Cincinnati, Ohio.
CLARK, EARLE, 244 Madison Ave., New York City. (1912)
*CLARK, EDWARD S., Care of D. T. Johnston, 149 Broadway, New York City. (1916)
CLARK, ELMER S., Long Point, Ill. (1923)
CLARK, FLOYD B., College Station, Texas. (1919)
CLARK, FRED E., 1602 Ashland Ave., Evanston, Ill. (1914)
CLARK, HORACE F., 101 Railway Exchange Bldg., Kansas City, Mo. (1923)
CLARK, JOHN B., 321 W. 92nd St., New York City. (1886)

CLARK, JOHN M., Compo Rd., Westport, Conn. (1909)
CLARK, LAWRENCE, State College of Washington, Pullman, Wash. (1921)
*CLARK, MARTIN, 91 Erie County Bank Bldg., Buffalo, N. Y. (1887)
†CLARK, R. F., Marietta College, Marietta, Ohio.
CLARK, VICTOR S., 8 Arlington St., Boston 9, Mass. (1906)
CLARK, W. C., S. W. Strauss and Company, 565 Fifth Ave., New York City. (1919)
CLARK, WALTER E., University of Nevada, Reno, Nev. (1902)
†CLARK UNIVERSITY LIBRARY, Worcester, Mass.
CLARKE, CASPAR W., National Bank of Commerce, Seattle, Wash. (1926)
CLAUSE, W. L., 1618 Frick Bldg., Pittsburgh, Pa. (1924)
CLAUSING, ROTH, University of Rochester, Rochester, N. Y. (1926)
CLAY, CASSIUS, Beekman, Bogue, Clark and Driscorn, 52 William St., New York City. (1922)
CLAY, HENRY, 2 Kingston Ave., Manchester, England. (1921)
CLAYTON, CLAUD F., East Lansing, Mich. (1927)
CLELAND, J. S., Monmouth College, Monmouth, Ill. (1919)
CLEMEN, RUDOLPH A., 650 Garland Ave., Winnetka, Ill. (1924)
CLEMENT, C. E., U. S. Department of Agriculture, Bureau of Dairy Industry, Washington, D. C. (1927)
CLEMENT, WALDO P., JR., 150 Broadway, New York City. (1927)
CLEUGH, JOHN, Bell Telephone Company of Canada, 118 Notre Dame St., W., Montreal, Canada. (1925)
†CLEVELAND PUBLIC LIBRARY, Order Department, 325 Superior Ave., Cleveland, Ohio.
CLEVELAND, WILLIAM C., Indiana University, Bloomington, Ind. (1922)
CLINE, DENZEL C., Princeton University, Department of Economics, Princeton, N. J. (1927)
CLOW, FREDERICK R., Oshkosh, Wis. (1894)
CLUTTON, FRED H., Butler Brothers, Randolph and Canal Sts., Chicago, Ill. (1926)
COAN, WILLIAM, Washington and Lee University, Lexington, Va. (1924)
COATS, R. H., Dominion Statistician, Ottawa, Canada. (1911)
COBB, JOHN C., 340 Adams St., Milton, Mass. (1926)
†COCKE MEMORIAL LIBRARY, Hollins College, Hollins, Va.
COGSWELL, LEDYARD, JR., New York State National Bank, Albany, N. Y. (1911)
COHEN, FRANK, 50 E. 42nd St., New York City. (1928)
COHEN, HARRY L., James Madison High School, E. 25th St., and Ave. Q, Brooklyn, N. Y. (1922)
COHEN, JULIUS HENRY, 111 Broadway, New York City. (1910)
COHEN, SAM L., 55 Liberty St., New York City. (1912)
COIT, MARY C., 22 Temple St., Boston, Mass. (1925)
COLE, ARTHUR H., 102 Fresh Pond Parkway, Cambridge, Mass. (1913)
COLE, WILLIAM M., 55 Brewster St., Cambridge, Mass. (1908)
COLESTOCK, HARRY L., Box 218, Highland Park Station, Los Angeles, Cal. (1925)
†COLLEGE OF AGRICULTURE AND MECHANIC ARTS, Mayaguez, Porto Rico.
†COLLEGE OF COMMERCE, 834 Ave. Joffre, French Concession, Shanghai, China.
COLLIER, BARRON G., 220 W. 42nd St., New York City. (1912)
COLLINGS, HARRY T., University of Pennsylvania, Department of Economics, Philadelphia Pa. (1917)
COLLINS, GEORGE R., New York University, Washington Sq., New York City. (1925)
COLLVER, CLINTON, 44 Pine St., New York City. (1926)
†COLORADO COLLEGE, COBURN LIBRARY, Colorado Springs, Colo.
†COLORADO, UNIVERSITY OF, LIBRARY, Boulder, Colo.

COMER, GEORGE P., U. S. Tariff Commission, Washington, D. C. (1924)
COMINS, EDWARD P., 200 Devonshire St., Boston, Mass. (1910)
COMISH, NEWEL H., 432 Hawthorne Court, Madison, Wis. (1918)
†COMMERZBIBLIOTHEK HAMBURG, Hamburg, Germany.
†COMMITTEE ON PUBLIC HEALTH RELATIONS, 5th Ave. and 103rd St., New York Academy of Medicine, New York City.
COMMON, ROBERT C., 186 Woodbridge Ave., Buffalo, N. Y. (1927)
COMMONS, JOHN R., University of Wisconsin, Madison, Wis. (1910)
†COMMONWEALTH BOND CORPORATION, 50 E. 42nd St., New York City.
†COMPTON UNION HIGH SCHOOL, Compton, Cal.
COMPTON, RALPH THEODORE, 1861 Yale Station, New Haven, Conn. (1926)
*COMPTON, WILSON, 402 Transportation Bldg., Washington, D. C. (1919)
COMSTOCK, ALZADA, Mount Holyoke College, South Hadley, Mass. (1914)
CONANT, LUTHER, JR., 87 Church St., Winchester, Mass. (1915)
CONARD, LAETITIA M., Grinnell, Iowa. (1927)
†CONCORD NORMAL SCHOOL, Athens, W. Va.
†CONCORDIA COLLEGE LIBRARY, Moorhead, Minn.
CONDLIFFE, JOHN B., Institute of Pacific Relations, Box 1561, Honolulu, Hawaii. (1924)
†CONFEDERACION ARGENTINA DEL COMERCIO, BOLSA DE COMERCIO, Buenos Aires, Argentina.
†CONFEDERAZIONE GENERALE DELL'INDUSTRIA ITALIANA, Piazza Venezia 11, Rome, Italy.
CONN, HARLAN D., Robert College of Constantinople, Constantinople, Turkey. (1926)
†CONNECTICUT AGRICULTURAL COLLEGE, Storrs, Conn.
†CONNECTICUT STATE LIBRARY, Hartford, Conn.
CONNER, BENJAMIN H., 5 Ave. de l'Opera, Paris, France. (1916)
CONNER, PAUL, University of Denver, Denver, Colo. (1924)
CONNOR, LOUIS G., 1003 Kearney St., N. E., Washington, D. C. (1923)
CONRAD, WILLIAM E. F., Box 342, Athens, Ohio. (1928)
†CONSOLIDATED GAS COMPANY OF NEW YORK, 130 E. 15th St., Room 1763, New York City.
†CONSOLIDATED GAS, ELECTRIC LIGHT AND POWER COMPANY, Baltimore, Md.
CONVERSE, PAUL D., College of Commerce and Business Administration, University of Illinois, Urbana, Ill. (1915)
*COOK, CHARLES C., 2222 6th St., N. W., Washington, D. C. (1893)
COOK, MAX H., Chula Vista, Cal. (1927)
COOLEY, CHARLES H., University of Michigan, Ann Arbor, Mich. (1890)
COOMBS, WHITNEY, 2013 New Hampshire Ave., N. W., Washington, D. C. (1922)
COON, SHIRLEY J., 4754 20th Ave., N. E., Seattle, Wash. (1927)
COONS, ARTHUR G., Occidental College, Los Angeles, Cal. (1920)
†COOPER UNION LIBRARY, Cooper Union, New York City.
COOPER, LYSLE W., 314 Cambridge Ave., Milwaukee, Wis. (1927)
COOPER, WALTER W., 511 City Hall, Oakland, Cal. (1920)
COPELAND, C. M., School of Commerce, Ohio University, Athens, Ohio. (1925)
COPELAND, MORRIS A., 207 Water St., Ithaca, N. Y. (1921)
COPELAND, MELVIN T., 324 Morgan Hall, Soldiers Field, Boston, Mass. (1909)
COPLAND, DOUGLAS B., University of Melbourne, Melbourne, Australia. (1916)
CORDELL, H. W., Ohio State University, College of Commerce, Columbus, Ohio. (1921)
CORNELL, JOHN, 234 Boulevard, Scarsdale, N. Y. (1926)
†CORNELL COLLEGE LIBRARY, Mount Vernon, Iowa
†CORNELL UNIVERSITY LIBRARY, Ithaca, N. Y.
CORRADINI, ROBERT E., 150 5th Ave., New York City. (1926)
CORRELL, ERNST H., Goshen College, Goshen, Ind. (1924)
†COSMOS CLUB, Corner H. St. and Madison Pl., Washington, D. C.

COSSON, CLARENCE, 1599 E. 9th St., Des Moines, Iowa. (1927)
COTTON, WILLIAM J. H. 1003 Trinity Ave., Durham, N. C. (1923)
†COUNCIL BLUFFS FREE PUBLIC LIBRARY, Council Bluffs, Iowa.
COUPER, WALTER J., 107 Whitney Ave., New Haven, Conn. (1923)
COUSENS, JOHN A., 207 Suffolk Rd., Chestnut Hill, Mass. (1924)
COVER, JOHN H., University of Pittsburgh, Pittsburgh, Pa. (1921)
COWAN, DAVID, Otis and Company, 15 Nassau St., New York City. (1924)
COWAN, DONALD R. G., Commercial Research Department, Swift and Company, Chicago, Ill. (1925)
COWDEN, DUDLEY J., 515 Clinton St., Easton, Pa. (1928)
COWDRICK, EDWARD S., 26 Broadway, Room 2307, New York City. (1926)
COX, ALONZO B., University Station, Austin, Texas. (1923)
COX, GARFIELD, Faculty Exchange, University of Chicago, Chicago, Ill. (1923)
COX, GEORGE C., 280 Madison Ave., New York City. (1911)
COX, HENRY R., 500 Riverside Drive, New York City. (1927)
COX, ROBERT A., 3200 Guadalupe St., Austin, Texas. (1922)
COX, ROBERT L., 1 Madison Ave., New York City. (1910)
CRAIG, DAVID R., University of Pittsburgh, Pittsburgh, Pa. (1925)
CRAIG, RALPH C., G. W. Van Slyke and Horton, 452 Clinton Ave., Albany, N. Y. (1921)
CRANE, CHARLES R., 522 5th Ave., New York City. (1901)
CRANFILL, SAMUEL E., 1117 Magnolia Ave., Bowling Green, Ky. (1925)
CRAVEN, IDA S., Robert Brookings School, 1724 Eye St., N W., Washington, D. C. (1926)
CRENNAN, C. H., Continental and Commercial National Bank, Chicago, Ill. (1920)
CRESWELL, CHARLES F., 165 Broadway, Room 910, New York City. (1923)
CRICKMAN, CHLORUS W., Sinnissippi Farm, Oregon, Ill. (1922)
CROMPTON, GEORGE, 25 Elm St., Worcester, Mass. (1912)
CRONIN, JOHN M., 61 Adams Ave., Watertown, Mass. (1928)
CROOK, WILFRED H., 6 Longfellow Ave., Brunswick, Me. (1926)
CROSBY, G. REGINALD, Hamilton Hall, Columbia University, New York City. (1925)
CROSS, IRA B., 1418 LeRoy Ave., Berkeley, Cal. (1910)
CROSS, M. C., Syracuse University, Syracuse, N. Y. (1928)
CROSS, WILLIAM T., Bank of Italy, San Francisco, Cal. (1925)
CROWELL, JOHN F., 89 N. Munn Ave., East Orange, N. J. (1888)
CROWTHER, SAMUEL, Bayside, N. Y. (1925)
CROXTON, FRED C. 83 S. High St., Columbus, Ohio. (1911)
CRUM, WILLIAM L., Graduate School of Business, Stanford University, Cal. (1921)
CRUMBAKER, CALVIN, 525 S. 6th St., E., Missoula, Mont. (1925)
CULEY, RAY T., 929 Sanborn Ave., Los Angeles, Cal. (1925)
†CUMBERLAND VALLEY STATE NORMAL SCHOOL LIBRARY, Shippensburg, Pa.
CUMBERLAND, WILLIAM W., Wellington and Company, 31 Pine St., New York City. (1916)
CUMMINGS, JOHN, 3029 Q. St., N. W.. Washington, D. C. (1896)
CUMMINGS, MARK W., 1628 Telephone Bldg., 1010 Pine St., St. Louis, Mo. (1927)
CUMMINS, ALBERT W., Box 602, Wilmington, Del. (1910)
CUMMINS, E. E., Burbank Rd., Wooster, Ohio. (1924)
CUNNINGHAM, JOHN B., Box 104, U Station, Tucson, Ariz. (1923)
CUNNINGHAM, WILLIAM J., 28 Buckingham St., Cambridge, Mass. (1912)
CUNNINGHAM, WALLACE M., University of Southern California, College of Commerce, Los Angeles, Cal. (1920)
CURRIE, LAUCHLIN B., 7 Sumner Rd., Cambridge, Mass. (1927)
CURRIER, GUY W., 6 Mt. Vernon Pl., Boston, Mass. (1910)

Curtis, Clifford A., Queen's University, Department of Political and Economic Science, Kingston, Canada. (1924)
Curtis, George B., Lehigh University, Bethlehem, Pa. (1926)
Curtis, George L., Clinton, Iowa. (1916)
Curtis, R. E., Knox College, Galesburg, Ill. (1920)
Cushing, Morgan B., Bowdoin College, Brunswick, Me. (1920)
Custard, Harry L., Riverside, South Hanson, Mass, (1926)
Custis, Vanderveer, Northwestern University, Evanston, Ill. (1904)
Cutcheon, Franklin W. M., Taylor, Blane, Capron, and Marsh, 22 William St., New York City. (1920)
†Dacca University, The Librarian, Department of Economics, Dacca, India.
Dade, Emil B., 1517 Rhode Island Ave., Lawrence, Kansas. (1923.
Dadisman, A. J., College of Agriculture, Morgantown, W. Va. (1917)
Daggett, Stuart, University of California, Berkeley, Cal. (1906)
Dahl, Gerhard M., 60 Broadway, New York City. (1919)
Dailey, Don M., 410 W. Sibley St., Howell, Mich. (1921)
Daines, Harvey C., Faculty Exchange, University of Chicago, Chicago, Ill. (1923)
†Dakota Wesleyan University, Mitchell, S. D.
†Dal, Leonard, Librarian, Handelshogskolans-Bibliothek, Sveavagen 65, Stockholm, Sweden.
Dale, Harrison C., University of Idaho, Moscow, Idaho. (1923)
†Dallas Public Library, Dallas, Texas.
Dameron, Wilbur R., 100 Stuyvesant Pl., St. George, Staten Island, N. Y. (1927)
Dana, James D., 42 Church St., New Haven, Conn. (1922)
Daniels, Winthrop M., 245 Whitney Ave., New Haven, Conn. (1925)
Dano, John, 524 Connell Bldg., Scranton, Pa. (1927)
†Darter Brothers and Company, P. O. Box 36, Stellenbosch, South Africa.
†Dartmouth College Library, Hanover, N. H.
Davenport, Donald H., Columbia University, New York City. (1924)
Davenport, Herbert J., Goldwin Smith Hall, Ithaca, N. Y. (1905)
David, Donald K., 1035 Park Ave., New York City. (1925)
Davies, George R., University of North Dakota, Grand Forks, N. D. (1925)
Davis, Darrell H., University of Minnesota, Minneapolis, Minn. (1924)
#Davis, Edgar B., 1330 Main St., Campello, Mass. (1914)
Davis, Edward H., 61 Oakland Ave., Waterbury, Conn. (1902)
Davis, Irving G., Connecticut Agricultural College, Storrs, Conn. (1920)
Davis, Jerome, Divinity School, Yale University, New Haven, Conn. (1924)
Davis, Joseph L., St Louis University, St. Louis, Mo. (1925)
Davis, Jean S., Agnes Scott College, Decatur, Ga. (1923)
Davis, Joseph S., Food Research Institute, Stanford University, Cal. (1911)
Davis, Mrs. Marian R., 260 W. 11th St., New York City. (1922)
Davis, Pierpont V., 55 Wall St., New York City. (1912)
Davis, William L., Akron University, Akron, Ohio. (1926)
Day, Arthur M., 152 Deer Hill, Danbury, Conn. (1899)
Day, Clive, 44 Highland St., New Haven, Conn. (1908)
#Day, Edmund E., University of Michigan, Ann Arbor, Mich. (1907)
Day, Henry B., 321 Chestnut St., West Newton, Mass. (1909)
†Dayton Public Library, Dayton, Ohio.
Dean, Prentice N., Faculty Club, University of Pittsburgh, Pittsburgh, Pa. (1924)
†Decatur Public Library, Decatur, Ill.
Deckerson, William E., University of Kentucky, Lexington, Ky. (1927)
†Defiance College, Defiance, Ohio.

Defoe, Luther M., 810 Virginia Ave., Columbia, Mo. (1911)
De Forest, Robert W., 30 Broad St., New York City. (1901)
#Deibler, F. S., Northwestern University, Evanston, Ill. (1908)
†Delaware University Library, Newark, Del.
†Delhi, University of, The Registrar, Delhi, India.
Dell, Burnham N., Box 205, Princeton, N. J. (1925)
De Loach, R. J. H., 111 W. Jackson Blvd., Chicago, Ill. (1920)
Demmery, Joseph, Portland Securities Company, 311 Railway Exchange, Portland, Ore. (1924)
Deng, D., H. S. M.'s Customs, Bangkok, Siam. (1928)
Dennis, W. M., 535 5th Ave. at 44th St., New York City. (1926)
§Dennison, Henry S., Framingham, Mass. (1911)
†Denver Public Library, Denver, Colo.
†Denver, University of, Library, Denver, Colo.
†Department of Agriculture Library, W. Block, Ottawa, Ontario, Canada.
†Department of Agricultural Economics, College Farm, New Brunswick, N. J.
†Department of Archives and History, Legislative Reference Bureau, Charleston, W. Va.
†Department of Industries and Commerce, P. O. Box 763, Wellington, New Zealand.
†Department of Labor and Industries, Library, 473 State House, Boston, Mass.
†Department of Labour, Ottawa, Ontario, Canada.
†Department of Railways Library, Marunouchi, Tokyo, Japan.
†De Paul Commerce Library, 84 E. Randolph St., Chicago, Ill.
†De Pauw University Library, De Pauw University, Greencastle, Ind.
Derry, George H., Marygrove College, Detroit, Mich. (1922)
†Det Statistiske Centralbyroa Bibliotek, Oslo, Norway.
†Detroit Public Library, Detroit, Mich.
†Detroit, College of the City of, 4841 Cass Ave., Detroit, Mich.
†Detroit, University of, Library, Six Mile Rd. and Livernois, Detroit, Mich.
*Devine, Edward T., American University, 1901 F St., N. W., Washington, D. C. (1893)
Dewey, C. S., Treasury Dept., Washington, D. C. (1926)
Dewey, Davis R., Mass. Institute of Technology, Cambridge A, Mass. (1886)
Dewey, F. A., 50 Broadway, 35th Floor, New York City. (1913)
Dewey, Francis H., Jr., 54 William St., Worcester, Mass. (1915)
Dewey, Ralph L., 446 King Ave., Columbus, Ohio. (1926)
Dewsnup, Ernest R., University of Liverpool, Liverpool, England. (1910)
Diamond, Herbert M., 805 W. Market St., Bethlehem, Pa. (1927)
Dice, Charles A., Ohio State University, Columbus, Ohio. (1919)
Dickie, Walter E., 509 E. Summit Ave., Webster Groves, Mo. (1927)
Dickinson, Asa D., University of Pennsylvania Library, Philadelphia, Pa. (1927)
Dickinson, F. G., 411 Commerce Bldg., University of Illinois, Urbana, Ill. (1923)
Dickinson, Z. Clark, Department of Economics, University of Michigan, Ann Arbor, Mich. (1920)
†Dickinson College Library, Carlisle, Pa.
*Dieckmann, Adolf, 2423 Harrison Ave., Cincinnati, Ohio. (1918)
Dietrich, Ethel B., Mount Holyoke College, South Hadley, Mass. (1920)
*Dill, Arthur C., 42 Chestnut St., Albany, N. Y. (1900)
Dillon, Augusto, Guayaquil, Ecuador. (1927)
Dillon, Arthur V., 52 Wyndemere Ave., Ridgewood, N. J. (1918)
Dillon, R. A., Casilla 618, Guayaquil, Ecuador. (1927)
Dinic, Carl J., Navarro, Mendocino County, Cal. (1926)
†Director General, Commercial Intelligence Dept., 1 Council House St., Calcutta, India.

†Director of Natural Resources, Intelligence Br., Department of Interior, Ottawa, Ontario, Canada.
†Director of Publications, Foreign Book Section, His Majesty's Stationery Office, Princes St., Westminster, S. W. 1, London, England.
Dix, S. M., 280 Broadway, New York City. (1910)
Dixon, Frank H., Princeton, N. J. (1894)
Dodd, David L., 414 School of Business, Columbia University, New York City. (1922)
Dodd, James H., Franklin, Indiana. (1926)
†van Doesburgh, S. C., Breestraat 14, Leiden, Netherlands.
†(Henry L.) Doherty and Company, Att: H. A. Wetmore, 60 Wall St., New York City.
Dohr, James L., School of Business Bldg., Columbia University, New York City. (1920)
Dolbeare, Harwood B., College of Commerce, Gainesville, Fla. (1923)
Donald, William J. A., 20 Vesey St., New York City. (1912)
Donaldson, John, George Washington University, Washington, D. C. (1925)
Donaldson, McPherrin H., University of Porto Rico, Rio Piedras, Porto Rico. (1925)
Donham, Wallace B., 183 Brattle St., Cambridge, Mass. (1909)
Donnan, Elizabeth, Wellesley College, Wellesley, Mass. (1922)
Donovan, William F., Altas Tack Corporation, Fairhaven, Mass. (1912)
Dorau, Herbert B., Wieboldt Hall, Northwestern University Campus, Chicago, Ill. (1925)
Doriot, Georges F., 17 University Hall, Cambridge, Mass. (1926)
Dorr, John V. N., 247 Park Ave., New York City. (1916)
†"Doshisha-Hogakubu," Maruzen Co. Ltd., (Branch Office), Kyoto (Sanjo-dori), Japan.
Doten, Carroll W., 58 Garfield St., Cambridge, Mass. (1902)
Dougall, Herbert E., 1508 Hinman Ave , Evanston, Ill. (1927)
Douglas, Mrs. Dorothy W., 1320 E. 56th St., Chicago, Ill. (1927)
Douglas, Lewis W., Room 185, House Office Bldg., Washington, D. C. (1916)
Douglas, Paul H., University of Chicago, Chicago, Ill. (1915)
†Dover Free Library, Dover, Del.
Downey, John O., Metropolitan Club, 5th Ave. and 60th St., New York City. (1924)
Downs, William C., P. O. Box 700, Rio de Janeiro, Brazil. (1912)
Dowrie, George W., Stanford University Cal. (1916)
Dozier, Howard D., Packers and Stockyards Admin., Department of Agriculture, Washington, D. C. (1918)
†Drake University Library, Des Moines, Iowa.
Draper, Ernest G., 375 Washington St., New York City. (1921)
Dreher, H. J., Box 346, Riverside, Cal. (1911)
Dreyfus, Edwin D., 402 W. Penn Bldg., Pittsburgh, Pa. (1922)
Drucker, A. P. R., Colorado College, Colorado Springs, Colo. (1923)
Drury, Horace B., 5025 Wisconsin Ave., Washington, D. C. (1915)
Drury, Luther E., University of Richmond Post Office, Va. (1923)
Du Bois, Charles G., 70 Lydecker Street, Englewood, N. J. (1911)
Du Brul, Ernest F., Prov. Bank Bldg., Cincinnati, Ohio. (1921)
†Dubuque, University of, Dubuque, Iowa.
Dudley, Arthur S., 1108 Majestic Bldg., Milwaukee, Wis. (1914)
Duehrssen, Werner, 642 McCormick Bldg., Chicago, Ill. (1925)
Duffus, William M., College of Commerce and Administration., Ohio State University, Columbus, Ohio. (1917)
Duffy, Walter F., Franklin, N. H. (1915)
Dulles, Eleanor L., 69 W. Cedar St., Boston, Mass. (1927)
†Duluth Public Library, Duluth, Minn.
Dummeier, Edwin F., Washington State College, Pullman, Wash. (1922)

Duncan, Acheson J., Room 91, Graduate College, Princeton, N. J. (1926)
Duncan, Carson S., 902 Transportation Bldg., Washington, D. C. (1915)
Duncan Delbert J., University of Colorado, Boulder, Colo. (1926)
Duncan, Kenneth, Pomona College, Claremont, Cal. (1915)
Dunkman, William E., Furnald Hall, Columbia University, New York City. (1926)
†Dupo-Community High School, Dupo, Ill.
†Dupriez, L., 190 Rue de Bruxells, Louvaine, Belgium.
Durand, E. Dana, 3613 Norton Pl., N. W., Washington, D. C. (1898)
Dutcher, Jessie R., 17 Garrison St., Boston, Mass. (1923)
Dye, Earl V., 900 W. College Ave., State College, Pa. (1920)
Dyer, Elizabeth, University of Cincinnati, Cincinnati, Ohio. (1927)
Earle, Frances M., 920 D St., N. E., Washington, D. C. (1928)
†Earlham College Library, Earlham, Ind.
†East Asiatic Economic Investigation Bureau, South Manchuria Railway Company, 1 Itchome Yurakucho, Tokyo, Japan.
†East Central State Teachers College Library, Ada, Okla.
Easterling, Thomas L., 270 Brookline Ave., Boston 17, Mass. (1923)
†Eastern Illinois State Teachers College, Library, Charleston, Ill.
†Eastern Kentucky Normal School Library, Lancaster Ave., Richmond, Ky.
Eastman, George, 900 East Ave., Rochester, N. Y. (1910)
Eavenson, Howard N., 4411 Bayard St., Pittsburgh, Pa. (1911)
Eaves, Lucile, 41 Clark Rd., Brookline, Mass. (1911)
Eberhard, George H., 290 First St., San Francisco, Cal. (1922)
Eberle, George J., 810 S. Spring St., Los Angeles, Cal. (1916)
Eberling, E. J., Vanderbilt University, Nashville, Tenn. (1927)
†L'Ecole des Hautes Etudes Commerciales, 399 Viger Ave., Montreal, P. Q., Canada.
†Economische Leestrommel, Kantoor V. Arbeid, Depart. V. Justitie, Weltevreden, Java, Dutch East Indies.
*Eddy, Sarah J., Bristol Ferry, R. I. (1893)
Edie, Lionel D., School of Commerce and Administration, University of Chicago, Chicago, Ill. (1924)
Edminster, Lynn R., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1923)
Edmonds, Richard H., Manufacturers' Record, Baltimore, Md. (1924)
Edwards, Alba M., Bureau of the Census, Washington, D. C. (1908)
Edwards, Corwin D., 903 Boulevard, Westfield, N. J. (1925)
Edwards, George W., 106 Central Park W., New York City. (1922)
Edwards, Richard E., First National Bank, Peru, Ind. (1914)
Effinger, R. Craig, American Exchange Irving Trust Company, 233 Broadway, New York City. (1915)
Ehrhorn, Oscar W., 44 W. 24th St., New York City. (1909)
Ehrle, Oscar F., 755 Westminster Rd., Brooklyn, N. Y. (1911)
§Eidlitz, Otto M., 41 E. 42nd St., New York City. (1907)
‡Einaudi, Luigi, via Lamarmora, 60, Turin, Italy. (1926)
†Einkaufsstelle des Borsenvereins der Deutschen Buchhandler, Konigstr. 35 Leipzig, Germany.
Eisman, Samuel, 120 E. 23rd St., New York City. (1917)
Eisner, Mark, 292 Madison Ave., New York City. (1922)
Eke, Paul A., College of Agriculture, Morgantown, W. Va. (1924)
Ekvall, Waldemar, Gotgatan 95, Stockholm, Sweden. (1921)
Eldrige, John G., Gainesville, Fla. (1927)
Eliot, Clara, Barnard College, New York City. (1922)

ELIOT, WILLIAM, III, 1843 Monroe St., N. W., Washington, D. C. (1922)
ELIOTT, GILBERT, 27 Reid Ave., Port Washington, L. I., N. Y. (1919)
†ELIZABETH FREE PUBLIC LIBRARY, Elizabeth, N. J.
ELKUS, ABRAM I., 165 Broadway, New York City. (1909)
ELLINGER, TAGE U., Department Live Stock Economics, International Live Stock Exposition, Union Stock Yards, Chicago, Ill. (1924)
ELLIOTT, EDWIN, Texas Christian University, Fort Worth, Texas. (1925)
ELLIOTT, GEORGE A., University of Manitoba, Winnipeg, Manitoba, Canada. (1926)
ELLIOTT, HOWARD, Room 421, 34 Nassau St., New York City. (1919)
ELLIOTT, MARGARET, School of Business Administration, University of Michigan, Ann Arbor, Mich. (1925)
ELLIS, GEORGE W., 149 Broadway, New York City. (1910)
ELLIS, RALPH, Jericho, L. I., N. Y. (1911)
ELLIS, RAY G., P. O. Box 483, Port Huron, Mich. (1921)
ELLSWORTH, J. O., A. and M. College, Stillwater, Okla. (1925)
ELLSWORTH, PAUL T., 23 Holden Green, Cambridge, Mass. (1928)
ELLWOOD, CHARLES A., 407 College Ave., Columbia, Mo. (1902)
ELSASSER, ROBERT W., Gibson Hall, Tulane University, New Orleans, La. (1925)
ELSTON, JAMES S., Travelers Insurance Company, Hartford, Conn. (1921)
ELSWORTH, RALPH H., 1924 Lawrence St., N. E., Washington, D. C. (1924)
ELWELL, FAYETTE H., 2025 Chadbourne Ave., Madison, Wis. (1911)
ELY, RICHARD T., 337 E. Chicago Ave., Chicago, Ill. (1886)
EMMET, BORIS, Graduate School of Business, Stanford University, Cal. (1919)
†EMORY AND HENRY COLLEGE LIBRARY, Emory, Va.
†EMORY UNIVERSITY LIBRARY, Emory University, Ga.
EMPIE, HOMER A., 356 Western Ave., Albany, N. Y. (1925)
EMSHEIMER, A. W., 17 Poplar Ave., Woodlawn, Wheeling, W. Va. (1918)
†ENCYCLOPEDIA BUREAU, Government General of Formosa, Taihoku, Taiwan, Japan.
ENGEL, EDWARD J., Sisson Hotel, 1725 E. 53rd St., Chicago, Ill. (1914)
ENGLE, NATHANAEL H., Department of Economics, University of Michigan, Ann Arbor, Mich. (1925)
#ENGLISH, DONALD, Cornell University, Ithaca, N. Y. (1911)
ENGLUND, ERIC, Office of the Secretary, U. S. Department of Agriculture, Washington, D. C. (1921)
ENNIS, J. HAROLD, 1724 Eye St., N. W., Washington, D. C. (1925)
EPSTEIN, RALPH C., 59 Norwalk Ave., Buffalo, N. Y. (1922)
ERDMANN, H. E., Division of Rural Institutions, University of California, Berkeley, Cal. (1918)
ERICKSON, ARTHUR E., Watertown, S. D. (1926)
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ESCHER, W. C., 22 Scheideggstrasse, Zurich, Switzerland. (1918)
ESTEY, JAMES A., 127 Waldron St., West Lafayette, Ind. (1916)
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EVANS, GEORGE H., JR., Johns Hopkins University, Baltimore, Md. (1927)
EVARTS, FRANK B., 1211 Bellflower Rd., Cleveland, Ohio. (1910)
EVENCHICK, ELIHU, 188 Second St., New York City. (1928)
EVENTOFF, L. J., Vtoroy Dom Sovietov, Ploschad Sverdlova, Moscow, Russia. (1927)
EVERETT, HELEN, 2113 Adams St., Madison, Wis. (1919)
EVERS, CECIL C., 184 Montague St., Brooklyn, N. Y. (1904)
EVERTS, W. S., 6416 Hillegass Rd., Oakland, Cal. (1925)
EWING, JOHN B., Box 86, Faculty Exchange, University of Oklahoma, Norman, Okla. (1926)

Ezekiel, Mordecai, Bureau of Agricultural Economics, Washington, D. C. (1924)
Fackler, Clarence W., New York University, New York City. (1926)
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Fagan, Elmer D., Department of Economics, University of Southern California, Los Angeles, Cal. (1927)
Fair, Marvin L., 110 W. Woodruff Ave., Columbus, Ohio. (1926)
Fairchild, Fred R., Yale Station, New Haven, Conn. (1904)
†Fairfield Public Library, Fairfield, Iowa.
Falconer, John I., Ohio State University, Columbus, Ohio. (1914)
Fall, Frank A., National Association of Credit Men, 1 Park Ave., New York City. (1925)
†Fall River Public Library, Fall River, Mass.
Farmer, Ralph H., University of Idaho, Moscow, Idaho. (1921)
*Farnam, Henry W., 43 Hillhouse Ave., New Haven, Conn. (1890)
Farnsworth, Helen C., Box 831, Stanford University, Cal. (1925)
†Farrington, Wendell F., Harvard, Mass.
Farris, T. N., Baton Rouge, La. (1927)
Faubel, Arthur L., New York University, 32 Waverly Pl., New York City. (1919)
Faulkner, Harold U., 186 Elm St., Northampton, Mass. (1926)
Faville, David E., 316 Morgan Hall, Soldiers Field, Boston, Mass. (1928)
Fay, C. Ryle, 374 Brunswick Ave., Toronto 4, Canada. (1925)
Fay, Charles Ralph, Erasmus Hall, Brooklyn, N. Y. 1923)
Fay, H. Van V., 5904 Cedar Parkway, Chevy Chase, Md. (1927)
Fay, W. Rodman, G. Shirmer, Inc., 3 E. 43rd St., New York City. (1913)
Fayant, Frank H., "Westover," Scarborough, N. Y. (1909)
†Federal Reserve Bank Library, Cleveland, Ohio.
†Federal Reserve Bank of Philadelphia Library, P. O. Box 1394, Philadelphia, Pa.
†Federal Reserve Bank of San Francisco Library, San Francisco, Cal.
†Federal Trade Commission, 2000 D St., N. W., Washington, D. C.
Fehlandt, August F., Ripon, Wis. (1915)
†Fehling, August W., Cecilienstrasse 24, Berlin, Zehlendorf mitte, Germany.
Feingold, Louis E., 340 Main St., Worcester, Mass. (1913)
Feis, Herbert, Department of Economics, University of Cincinnati, Cincinnati, Ohio. (1921)
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Feldstein, B. H., 1122 Mellon St., Pittsburgh, Pa. (1924)
*Felt, D. E., 1735 N. Paulina Street, Chicago, Ill. (1918)
Fennelly, John F., 309 W. 109th St., New York City. (1927)
Fenninger, Carl W., 1508 Chestnut St., Philadelphia, Pa. (1925)
Ferguson, Homer L., Newport News, Va. (1920)
Ferguson, Maxwell, 170 Hicks St., Brooklyn, N. Y. (1917)
†Ferguson Library, Stamford, Conn.
Fetrow, W. W., Oklahoma A. and M. College, School of Agriculture, Stillwater, Okla. (1925)
Fetter, Frank A., 121 Broadmead, Princeton, N. J. (1894)
Fetter, Frank W., 121 Broadmead, Princeton, N. J. (1923)
Ficek, Charles F., II.-Zderaz 9, Prague, Czechoslovakia. (1926)
Fichtner, Charles C., Fichtner Tours, Fayetteville, Ark. (1924)
Field, Arthur S., 3607 Lowell Street, Washington, D. C. (1906)
Field, Marshall, 4 E. 70th St., New York City. (1920)
Fields, Harold, 342 Madison Ave., New York City. (1927)
Fife, Harry M., 12 College Street, Middlebury, Vt. (1926)
Filene, A. Lincoln, 416 Washington St., Boston, Mass. (1909)

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Fink, Cornelius W., Ohio University, Athens, Ohio. (1923)
Fireoved, Elgie L., 300 Third Ave., S. E., LeMars, Iowa. (1926)
†First Chiao Tung University Library, Zi Ka Wei, Shanghai, China.
†Firth, Norman, Magazine of Business, Cass, Huron, and Erie Streets, Chicago, Ill.
Fishburn, J. P., Box 1139, Roanoke, Va. (1923)
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Fisher, Robert, Commonwealth Fund, 1 E. 57th St., New York City. (1928)
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Fitzgerald, J. Anderson, University of Texas, Austin, Texas. (1914)
Fjeld, Erastus I., Law Bldg., University of Colorado, Boulder, Colo. (1925)
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Fleming, Ralph D., Department of Education Bldg., Room 326, Albany, N. Y. (1911)
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Ford, Worthington C., Massachusetts Historical Society, Boston, Mass. (1887)
Fordham, Herbert, Trinity Bldg., 111 Broadway, New York City. (1910)
Foreman, Clarence J., 230 W. McMillan St., Cincinnati, Ohio. (1918)
de Forest, Henry W., 30 Broad St., New York City. (1911)
Forney, E. H., The Belle Springs Creamery Company, Abilene, Kans. (1917)

Forney, Rueben L., 1010 Pleasant St., Oak Park, Ill. (1925)
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Fournier, Leslie T., 53 Park Pl., Princeton, N. J. (1926)
†Fourth High School, Kanazawa, Japan.
Fowler, Charles B., 20 Vermont Ave., Prospect Park, White Plains, N. Y. (1925)
Fowler, Edwin J., 72 W. Adams St., Chicago, Ill. (1925)
Fox, A. M., 220 Elm St., Chevy Chase, Md. (1923)
Fox, Feramorz Y., Latter-Day Saints Business College, Salt Lake City, Utah. (1919)
Fox, Hugh F., 50 Union Square, New York City. (1924)
Fox, Martin J., A. S. Rosenthal, Inc., 112 Madison Ave., New York City. (1924)
Fradenburgh, Adelbert G., College of City of New York, 80 Willoughby St., Brooklyn, N. Y. (1894)
Frain, H. La Rue, 289 Congress Ave., Lansdowne, Pa. (1923)
Frame, H. C., College of Business Administration, University of Washington, Seattle, Wash. (1922)
Frame, S. J., 24 King St., W., Toronto, Ont., Canada. (1918)
Frame, William A., Box 202, Fruitland Park, Fla. (1915)
France, Joseph C., Continental Bldg., Baltimore, Md. (1911)
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Franklin, Fabian, 417 Riverside Drive, New York City. (1892)
†Franklin College Library, Franklin, Ind.
†Franklin and Marshall College Library, Lancaster, Pa.
*Fraser, George C., 20 Exchange Pl., New York City. (1915)
Fraser, Herbert F., 521 Elm Ave, Swarthmore, Pa. (1926)
Frazier, Raymond R., 1101 Second Ave., Seattle, Wash. (1927)
Frederick, John H., Logan Hall, University of Pennsylvania, West Philadelphia, Pa. (1925)
Freeland, Willard E., Massachusetts Institute of Technology, Cambridge, Mass. (1919)
Freeman, Clytus A., 3914 40th St., Brentwood, Maryland. (1914)
Freeman, Edwin S., 10 Benton St., Wellesley, Mass. (1924)
Freeman, Harrison B., Jr., 50 State St., Hartford, Conn. (1901)
#Freeman, Herbert C., 960 N. Broadway, Yonkers, N. Y. (1917)
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Frew, Walter E., Corn Exchange Bank, William and Beaver Sts., New York City. (1913)
Frey, H. A., Northwestern University, School of Commerce, Evanston, Ill. (1928)
Frickey, Edwin, Harvard Economic Service, 1430 Massachusetts Ave., Cambridge, Mass. (1924)
Friday, David, 1916 17th St., N. W., Washington, D. C. (1910)
Friedel, J. H., 666 West End Ave., New York City. (1922)
Friedman, Elisha M., Room 1701, 11 Wall St., New York City. (1918)
#Friedman, H. G., 202 Riverside Drive, Apt. 7 E, New York City. (1908)
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FRISSELL, ALGERNON S., 530 Fifth Ave., New York City. (1916)
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FROST, WESLEY, American Consul, Marseilles, France. (1919)
FRY, C. LUTHUR, 72-84 Barrow St., New York City. (1920)
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†FUJITA, TSUGUO, 30 Hyakunin-Cho, Okubo, Tokyo, Japan.
*FUKUDA, TOKUZO, 101 Nakano, near Tokyo, Japan. (1912)
FULLBROOK, EARL S., University of Nebraska, Lincoln, Neb. (1921)
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FURNISS, EDGAR S., 542 Yale Staton, New Haven, Conn. (1915)
FURUKAWA, YOZO, 13 Enokimachi, Iyo, Matsuyama, Japan. (1925)
GABRIEL, HARRY S., University of Delaware, Newark, Del. (1927)
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GAGLIARDO, DOMENICO, Department of Economics, University of Kansas, Lawrence, Kans. (1925)
GAILLARD, DAVID S., 839 17th St., N. W., Washington D. C. (1927)
†GALESBURG PUBLIC LIBRARY, Galesburg, Ill.
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GALPIN, C. J., Bureau of Agricultural Economics, Washington, D. C. (1924)
GALPIN, HENRY L., 145 Everit St., New Haven, Conn. (1911)
GANN, WILLIAM D., 50 Broad St., New York City. (1925)
GANONG, CAREY K., Saint John Vocational School, Saint John, N. B., Canada. (1927)
GARDNER, EDWARD H., University of Wisconsin, Madison, Wis. (1921)
*GARDNER, FREDERICK D., 1821 Chouteau Ave., St. Louis, Mo. (1915)
#GARDNER, HENRY B., 54 Stimson Ave., Providence, R. I. (1886)
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GARFIELD, HARRY A., Williams College, Williamstown, Mass. (1898)
GARRETT, C. W., 119 Broad St. Station, Philadelphia, Pa. (1923)
GARRETT, S. S., Sibley College, Cornell University, Ithaca, N. Y. (1921)
GARVAN, FRANCIS P., 67 Wall St., New York City. (1914)
GARVER, FREDERIC B., University of Minnesota, School of Business, Minneapolis, Minn. (1911)
GARVEY, BENJAMIN S., Room 1801, 212 W. Washington St., Chicago, Ill. (1911)
GARWOOD, L. E., Coe College, Cedar Rapids, Iowa. (1923)
GAULT, EDGAR H., 165 Griswold St., Delaware, Ohio. (1923)
GAUNT, ERNEST H., 220 5th Ave., New York City. (1924)
GAY, EDWIN F., 1038 Beacon St., Brookline, Mass. (1904)
†GEBETHNER AND WOLFF, Rue Krakowskie Przedmiescie 15, Warsaw, Poland.
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GEER, CURTIS M., 55 Elizabeth St., Hartford, Conn. (1928)
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GEPHART, WILLIAM F., First National Bank, St. Louis, Mo. (1906)
GERSTENBERG, CHARLES W., Prentice-Hall, Inc., 70 5th Ave., New York City. (1910)
*GEST, WILLIAM P., Merion Station, Pa. (1905)
GIBSON, THOMAS, 53 Park Pl., New York City. (1918)
GIDDINGS, FRANKLIN H., Kent Hall, Columbia University, New York City. (1886)
‡GIDE, CHARLES, àl a Faculté de Droit, Place de Panthéon, Paris, France. (1892)
GIDEONSE, HARRY D., 10 Rue St. Leger, Geneva, Switzerland. (1925)
GIESECKE, ALBERT A., Dir. General di Instrucción Pública, Casilla 2100, Lima, Peru, S. A. (1907)
GIFFORD, W. S., 195 Broadway, New York City. (1909)
GILBERT, HORACE N., 1 Glass Hall, Soldiers Field, Boston, Mass. (1928)
GILBERT, JAMES H., 1167 E. 22nd St., Eugene, Ore. (1909)
GILBERT, S. PARKER, 33 Luisenstrasse, Berlin, Germany. (1925)
GILE, BUEFORD M., University of Arkansas, Division of Economics, Fayetteville, Ark. (1925)
GILL, CORRINGTON C., 2630 Adams Mill Rd., Washington, D. C. (1928)
GILLETT, ROY L., 122 State St., Albany, N. Y. (1920)
GILLIES, ROBERT C., Room 1420, 111 Broadway, New York City. (1921)
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GLASS, WILLIAM, Co-operative Californian, Fresno, Cal. (1911)
GLASSON, WILLIAM H., 710 Buchanan Rd., Durham, N. C. (1902)
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GLENN, JOHN M., 1 Lexington Ave., New York City. (1894)
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GLOCKER, THEODORE W., University of Tennessee, Knoxville, Tenn. (1908)
GLOVER, CHARLES A., 548 W. 113th St., New York City. (1925)
GOEDEKE, W. J., 3820 Waldo Ave., 2-H., New York City. (1924)
GOETZ, JACOB H., 783 E. 17th St., Brooklyn, N. Y. (1914)
GOLDENWEISER, EMANUEL A., 218 Elm St., Chevy Chase, Md. (1911)
GOLDSMITH, MARGARET L., Nurnbergerstrasse 7, Berlin W. 50, Germany. (1919)
GOMEZ, MARTE R., Chihuahua 163, Mexico, D. F. (1927)
GOODALE, FRANCIS G., 53 State St., Boston, Mass. (1927)
GOODEN, O. T., Conway, Ark. (1920)
GOODER, L. M., 1046 Ely Rd., Winnetka, Ill. (1923)
GOODHUE, EVERETT W., Dartmouth College, Hanover, N. H. (1905)
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GOODRICH, CARTER L., Department of Economics, University of Michigan, Ann Arbor, Mich. (1921)
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*GORDON, LOUIS D., First National Bank Bldg., San Francisco, Cal. (1916)
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GOTTLIEB, L. ROSS, 677 W. End Ave., New York City. (1922)
GOTZINGER, KARL, First Secretary of Chamber of Commerce, Stubenring 8/10, Vienna I, Austria. (1926)
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GOURVITCH, ALEXANDER, 3224 Grand Concourse, New York City. (1926)
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GRAHAM, T. BERTRAND, Metropolitan Life Insurance Company, New York City. (1917)
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GRAS, N. S. B., Harvard School of Business, Soldiers Field, Boston, Mass. (1918)
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GRAVES, L. M., Brookmire Economic Service, 570 7th Ave., New York City. (1927)
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GRAY, EDWARD R., Room 259, Soc. of Statistics, Treasury Bldg., Washington, D. C. (1925)
GRAY, EDITH S., U. S. Children's Bureau, Washington, D. C. (1912)
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GRAY, JOHN H., 1323 Jackson St., Washington, D. C. (1888)
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GRAY, WILLIAM R., Hanover, N. H. (1911)
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GREENDLINGER, LEO, Alexander Hamilton Institute, 13 Astor Pl., New York City. (1910)
GREENHILL, DOUGLAS C., Allerton Club, Chicago, Ill. (1925)
GREENING, CHARLES H., 190 Baldwin Ave., Jersey City, N. J. (1927)
GREGORY, R. H., Western Electric Company, 195 Broadway, New York City. (1920)
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GREVE, CHARLES T., Maxwell Ave., Vernonville, Cincinnati, Ohio. (1911)
GREVE, WILLIAM M., 162 Remsen St., Brooklyn, N. Y. (1916)

GREY, DAVID L., 506 Olive St., St. Louis, Mo. (1911)
GRIES, JOHN M., Division of Building and Housing, U. S. Department of Commerce, Washington, D. C. (1910)
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†GROUPEMENT DES HOUILLERES DU NORD ET DU PAS-DE-CALAIS, 35 Rue Saint Dominique, Paris (7), France.
GROVES, HAROLD M., University of Wisconsin, Department of Economics, Madison, Wis. (1926)
GRUNEBAUM, L. H., 14 Wall St., New York City. (1927)
†GUARANTY TRUST COMPANY OF NEW YORK, Reference Library, 140 Broadway, New York City.
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GUILD, LAWRENCE R., 5471 Bartlett St., Pittsburgh, Pa. (1926)
GIURADO, E., P. E. Station, Whittier, Cal. (1926)
GULICK, CHARLES A., JR., 2662 Hilgard St., Berkeley, Cal. (1923)
GUMBART, EDWARD H., P. O. Box 312, Connecticut Agricultural College, Storrs, Conn. (1924)
GUNNARSON, A. B., 2519 10th Ave., S., Minneapolis, Minn. (1925)
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GUY, ALFRED E., 10209 103rd St., Edmonton, Alberta, Canada. (1920)
‡GUYOT, YVES, 95 rue de Seine, Paris, France. (1922)
HAAKE, ALFRED P., Simmons Company, 110 E. 42nd St., New York City. (1916)
HAAS, FRANCIS J., St. Francis Seminary, St. Francis, Wis. (1923)
HAAS, GEORGE C., Bureau of Agricultural Economics, Washington, D. C. (1923)
DE HASS, J. ANTON, Graduate School of Business Administration, Harvard University, Cambridge, Mass. (1921)
HABER, WILLIAM G., Michigan State College, Economics Department, East Lansing, Mich. (1925)
†HACKLEY PUBLIC LIBRARY, Muskegon, Mich.
HADLEY, ARTHUR T., 93 Whitney Ave., New Haven, Conn. (1888)
HAGERTY, JAMES E., Ohio State University, Columbus, Ohio. (1902)
HAHNE, ERNEST H., 731 Monticello St., Evanston, Ill. (1912)
HAIG, ROBERT M., School of Journalism, Columbia University, New York City. (1911)
†HAILEY COLLEGE OF COMMERCE, The Principal, Lahore, India.
HALE, E. EVERETT, University of Texas, Austin, Texas. (1927)
HALE, ROBERT L., Columbia University, New York City. (1911)
HALEY, BERNARD F., P. O. Box 1402, Stanford University, Cal. (1926)

Halfant, David M., University of Missouri, School of Business and Public Administration, Columbia, Mo. (1928)
Hall, Henry B., 8 Garden Rd., Wellesley Hills, Mass. (1927)
Hall, Lincoln W., Wharton School, University of Pennsylvania, Philadelphia, Pa. (1921)
Haller, C. T., Colonial Supply Company, 217 Water St., Pittsburgh, Pa. (1918)
Halley, Donald M., Gibson Hall, Tulane University, New Orleans, La. (1925)
Halsey, Olga S., Care of Mrs. W. Duguid, 12 Dunstable Rd., Cambridge, Mass. (1914)
Ham, William T., Emerson Hall, Social Ethics Department, Cambridge, Mass. (1925)
Hamaoka, Itsuo, Bank of Japan, Tokyo, Japan. (1915)
#Hamill, Charles H., 105 W. Monroe St., Chicago, Ill. (1910)
Hamilton, Edward P., 440 4th Ave., New York City. (1924)
Hamilton, James M., Bozeman, Mont. (1920)
Hamilton, Thomas R., 2801 Adams Mill Rd., Washington, D. C. (1923)
Hamilton, Walton H., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1916)
Hamlin, Charles S., 1751 New Hampshire Ave., N. W., Washington, D. C. (1900)
†Hamline University Library, St. Paul, Minn.
Hammarstrom, Albert H., 208 Weston Bldg., Clinton, Iowa. (1917)
Hammond, C. B., Acme Wire Company, New Haven, Conn. (1922)
Hammond, John Hays, 2301 Kalorama Rd., Washington, D. C. (1911)
#Hammond, Matthew B., Ohio State University, Columbus, Ohio. (1894)
Hanaway, Roy C., 21 Crescent Ave., St. George, Staten Island, N. Y. (1928)
Hancock, Glover D., Washington and Lee University, Lexington, Va. (1908)
Hand, Learned, U. S. District Court, Old P. O. Bldg., New York City. (1910)
Handman, Max S., University of Texas, Austin, Texas. (1918)
Haney, Lewis H., 90 Trinity Pl., New York City. (1906)
†Hanger, James H., 320 W. Castle St., Syracuse, N. Y.
Hankins, Frank H., 62 Kensington Ave., Northampton, Mass. (1907)
*Hanks, Mrs. C. Stedman, Manchester, Mass. (1888)
†Hanover College Library, Hanover, Ind.
Hanselman, John J., 10 Argyle Rd., Brooklyn, N. Y. (1920)
Hansen, Alvin H., 220 Cecil St., S. E., Minneapolis, Minn. (1919)
Hansen, C. Frederick, W. T. Grant Company, 455 7th Ave., New York City. (1924)
Hansen, W. I., 4 Columbia St., Schenectady, N. Y. (1922)
Hanson, Alice, 4747 16th Ave., N. E., Seattle, Wash. (1925)
Hanson, Arthur W., Morgan Hall 219, Soldiers Field, Boston, Mass. (1924)
Harbeson, R. W., 11 University Ave., Canton, N. Y. (1927)
#Harbord, J. G., 233 Broadway, New York City. (1927)
†(Warren G.) Harding High School Library, 365 N. Elm St., Warren, Ohio.
Hardy, Charles O., 26 Jackson Pl., Washington, D. C. (1919)
Hardy, Edward R., 85 John St., New York City. (1911)
#Hardy, Francis A., 1505 The Tower Bldg., Chicago, Ill. (1912)
Hardy, George E., Linden Ave., Englewood, N. J. (1912)
Haring, H. A., Woodland (Ulster Co.), N. Y. (1926)
Haring, Harry A., Jr., University of North Carolina, Box 4, Chapel Hill, N. C. (1928)
Harlan, Charles L., Div. of Crop and Live Stock Estimates, U. S. Department of Agriculture, Washington, D. C. (1920)
Harr, Luther A., Logan Hall, Philadelphia, Pa. (1921)
†Harrassowitz, Otto, Leipzig C 1, Germany.
*Harriman, Edward A., 735 Southern Bldg., Washington, D. C. (1914)
Harriman, John W., 7 Shaler Lane, Cambridge, Mass. (1925)
Harris, George W., 2411 Homan, Waco, Texas. (1925)

HARRIS, JOSEPH P., Union Trust Company, Cleveland, Ohio. (1917)
HARRIS, LOUIS H., 27 W. 72nd St., New York City. (1923)
HARRIS, RALPH B., University of Richmond, Richmond, Va. (1925)
HARRIS, SEYMOUR E., 7 Holyoke House, Cambridge, Mass. (1926)
†HARRIS, STANLEY G., 3700 Washington St., San Francisco, Cal.
HARRIS, W. CARLTON, 212 S. 39th St., Philadelphia, Pa. (1925)
†HARRIS TEACHERS COLLEGE, 1517 S. Theresa Ave., St. Louis, Mo.
HARRISON, G. CHARTER, Room 1415 Conway Bldg., 111 W. Washington St., Chicago, Ill. (1917)
HARRISON, MILTON W., 11 E. 36th St., New York City. (1919)
HART, CHARLES H., 18 E. 125th St., New York City. (1909)
†HARTFORD PUBLIC LIBRARY, Hartford, Conn.
HARTSHORNE, RICHARD, University of Minnesota, Minneapolis, Minn. (1925)
HARTSOUGH, MILDRED, 7 Paradise Rd., Northampton, Mass. (1924)
†HARVARD UNIVERSITY BUSINESS LIBRARY, Widener Bldg., Cambridge 38, Mass.
†HARVARD UNIVERSITY LIBRARY, Cambridge, Mass.
HARVEY, PAUL, 87 Barrow St., New York City. (1927)
HARVILL, RICHARD A., A. and M. College, Miss. (1928)
HASBROUCK, HENRY C., 61 Broadway, New York City. (1911)
HASEK, CARL W., Box 560, State College, Pa. (1922)
HASKELL, SIDNEY B., Massachusetts Agricultural Experiment Station, Amherst, Mass. (1924)
HASSE, ADELAIDE R., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1914)
HASSINGER, LUTHER C., Konnarock, Va. (1911)
†HASTINGS COLLEGE LIBRARY, Hastings, Neb.
HASTINGS, HUDSON B., 6 Everit St., New Haven, Conn. (1920)
HASTINGS, WILLIAM G., 132 N. 41st St., Omaha, Neb. (1904)
HATCH, LEONARD W., 425 Pelham Manor Rd., Pelham Manor, N. Y. (1901)
HATFIELD, HENRY R., 2695 Le Conte Ave., Berkeley, Cal. (1898)
*HATHAWAY, FRANK R., Hudson, Columbia County, R. F. D. #2, N. Y. (1888)
HATTON, WILLIAM H., New London, Wis. (1901)
HAUHART, WILLIAM F., Southern Methodist University, Dallas, Texas. (1920)
†HAVERFORD COLLEGE LIBRARY, Haverford, Pa.
†HAVERHILL PUBLIC LIBRARY, Haverhill, Mass.
†HAWAII, LIBRARY OF, Honolulu, Hawaii.
†HAWAII, COLLEGE OF, LIBRARY, Honolulu, Hawaii.
HAWKINSON, JAMES R., Northwestern University, School of Commerce, Evanston, Ill. (1927)
HAWLEY, FREDERICK B., The Kennedy, 201 W. 87th St., New York City. (1888)
HAWLEY, THOMAS D., Ontonagon, Mich. (1926)
HAYEK, F. A., III Leonhardgasse 3, Vienna, Austria. (1924)
HAYES, H. GORDON, 1583 Perry St., Columbus, Ohio. (1915)
HAYFORD, F. LESLIE, General Motors Corporation, 224 W. 57th St., New York City. (1919)
HAYNES, WILLIAMS, 25 Spruce St., New York City. (1924)
HEALY, THOMAS H., 431 6th St., N. W., Washington, D. C. (1926)
HEATH, CHARLES O., Clemson College, S. C. (1925)
HEATH, WALTER A., 4307 Burke Ave., Seattle, Wash. (1927)
HEATON, HERBERT, Queen's University, Kingston, Canada. (1926)
HECHT, CHARLES, 300 Madison Ave., New York City. (1918)
HECK, CHESTER R., McGraw-Hill Book Company, Inc., 370 7th Ave., New York City. (1928)

HEDRICK, WILBUR O., East Lansing, Mich. (1910)
†(W.) HEFFER AND SONS, LTD., Cambridge, England.
HEILMAN, ERNEST A., University of Minnesota, Minneapolis, Minn. (1925)
HEILMAN, RALPH E., Wieboldt Hall, Northwestern University, Chicago, Ill. (1914)
HEISS, CHARLES A., 195 Broadway, New York City. (1913)
HELD, FELIX E., College of Commerce, Journalism, Ohio State University, Columbus, Ohio. (1922)
†HELENA PUBLIC LIBRARY, Helena, Mont.
HELM, WILBUR, Suite 831, First National Bank Bldg., Chicago, Ill. (1926)
HELMING, OSCAR C., 217 Winona St., Northfield, Minn. (1922)
HELMS, LLOYD A., 212 W. Nevada St., Urbana, Ill. (1927)
HEMMEON, JOSEPH C., McGill University, Montreal, Canada. (1909)
HENCH, WILLIAM M., 106 Slocum Hall, Syracuse, N. Y. (1928)
HENDEL, JULIUS, 3433 Portland Ave., Minneapolis, Minn. (1925)
HENDERSON, ALGO D., Yellow Springs, Ohio. (1926)
HENDERSON, BERTHA, Box 72, Fairbury, Neb. (1924)
HENDERSON, DONALD J., 35 Huntington St., New Brunswick, N. J. (1928)
HENDERSON, L. G., Ronald Press Company, 15 E. 26th St., New York City. (1919)
HENDRICKSON, CLARENCE I., Storrs, Conn. (1924)
†HENDRIX COLLEGE LIBRARY, Conway, Ark.
HENDRIX, ENOS L., 2431 N. Tripp Ave., Chicago, Ill. (1924)
HENNEY, HOMER J., Kansas State Agricultural College, Manhattan, Kan. (1928)
HENRY, JOHN M., Coe College, Cedar Rapids, Iowa. (1923)
HERBST, ALMA, Green Hall, University of Chicago, Chicago, Ill. (1924)
HERLING, R. ROBERT, 206 Nassau St., Princeton, N. J. (1924)
HERROLD, L. D., Northwestern University School of Commerce, Evanston, Ill. (1927)
HESS, EDITH, 844 North St., Nacogdoches, Texas. (1922)
HESS, HERBERT W., Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1912)
HEWES, AMY, Mount Holyoke College, South Hadley, Mass. (1906)
HEWETT, WILLIAM W., Wharton School, University of Pennsylvania, Philadelphia, Pa. (1921)
HEXTER, MAURICE B., 24 Province St., Boston, Mass. (1924)
HIBBARD, B. H., College of Agriculture, Madison, Wis. (1908)
†HIBBING SCHOOL LIBRARY, Hibbing, Minn.
HICKERNELL, WARREN F., 51 E. 90th St., New York City. (1924)
HICKOK, C. T., Coe College, Cedar Rapids, Iowa. (1924)
*HIJAKATA, S., 47 Ichibancho, Kojimachi-ku, Tokyo, Japan. (1921)
HILDEBRAND, EDWARD, 321 Bedford Park Blvd., New York City. (1909)
HILDUM, CLAYTON E., 143 Liberty St., New York City. (1925)
HILL, A. C. C., JR., International Y. M. C. A. College, Springfield, Mass. (1927)
HILL, DONALD M., 1 Federal St., Boston, Mass. (1909)
HILL, GEORGE B., Box 67, P. O. Station F, New York City. (1923)
HILL, IRVING, Lawrence, Kan. (1919)
HILL, JOSEPH A., Census Office, Washington, D. C. (1887)
HILL, JOHN W., Pentou Publishing Company, Cleveland, Ohio. (1923)
HILL, ROLLIN C., 349 Harvard St., Cambridge, Mass. (1925)
HILL, ROBERT T., 360 N. Fulton Ave., Mount Vernon, N. Y. (1910)
HILLHOUSE, JAMES, Sachem's Wood, New Haven, Conn. (1909)
HIMES, NORMAN E., 25 Holden Green, Cambridge, Mass. (1925)
HIMMELBLAU, DAVID, 337 E. Chicago Ave., Chicago, Ill. (1914)
HINDSLEY, NORMAN, P. Burns and Company, Calgary, Alberta, Canada. (1918)

#Hines, Walker D., 61 Broadway, New York City. (1903)
Hinrichs, A. F., 108 Williams St., Providence, R. I. (1923)
†Hiram College Library, Hiram, Ohio.
†Hirst Library, Georgetown University, Washington, D. C.
Ho, Franklin L., School of Commerce, Nankai University, Tien-Tsen, China. (1923)
Hoagland, H. E., Ohio State University, Columbus, Ohio. (1910)
†Hobart College Library, Geneva, N. Y.
Hobbs, Franklyn, 105 S. La Salle St., Chicago, Ill. (1920)
Hobson, Asher, State Department, (Rome Pouch) Washington, D. C. (1920)
Hodges, George W., 14 Wall St., New York City. (1916)
Hodgkins, Alton R., St. Paul St. and Mount Vernon Pl., Baltimore, Md. (1926)
Hodgson, Caspar W., 313 Park Hill Ave., Yonkers, N. Y. (1917)
Hoffman, Wright, Department of Economics, University of Pennsylvania, Philadelphia, Pa. (1920)
†Hoffman Library, St. Stephens College, Annandale-on-Hudson, N. Y.
Hohman, Elmo P., 912 Elmwood Ave., Evanston, Ill. (1923)
Holcomb, Alfred E., 195 Broadway, New York City. (1910)
Holdsworth, John T., University of Miami, Coral Gables, Fla. (1903)
Hollander, Jacob H., Johns Hopkins University, Baltimore, Md. (1890)
Hollingshead, George G., 47 Afterglow Way, Montclair, N. J. (1916)
Holmes, C. L., Agricultural Experiment Station, Ames, Iowa. (1918)
Holmes, George E., 15 William St., New York City. (1918)
Holmes, Lowell L., University of Akron, Akron, Ohio. (1927)
Holmes, Robert S., Graduate College, Princeton, N. J. (1926)
Holt, Lucius H., West Point, N. Y. (1921)
Holt, Pliny E., Holt Manufacturing Company, Stockton, Cal. (1914)
Homan, Paul T., Cornell University, Ithaca, N. Y. (1925)
†Hood College Library, Frederick, Md.
†Hood, H. K., 618 Packard St., Ann Arbor, Mich.
Hood, W. Burton, Department of Economics, Brandon College, Brandon, Manitoba, Canada. (1924)
Hooker, George E., Hull House, 800 S. Halsted St., Chicago, Ill. (1923)
Hoover, Calvin B., Economics Department, Duke University, Durham, N. C. (1925)
Hoover, David H., 804 Springfield Ave., Urbana, Ill. (1927)
Hoover, Glenn E., Department of Economics, Mills College, Mills College P. O., Cal. (1925)
Hopkins, Francis W., 1985 Yale Station, New Haven, Conn. (1927)
Hopkins, John A., Iowa State College, Ames, Iowa. (1922)
Hopkins, Louis J., 1385 Hillcrest Ave., Pasadena, Cal. (1911)
#Hopson, Howard C., 61 Broadway, New York City. (1911)
Hornbeak, S. L., 808 W. Marvin St., Waxahachie, Texas. (1921)
Horner, John T., East Lansing, Mich. (1922)
Horner, Seward L., General Motors, Treasury Department, 224 W. 57th St., New York City. (1923)
Horton, D. C., University of Michigan, Ann Arbor, Mich. (1926)
Horwitz, James W., 910 Memorial Dr., Cambridge, Mass. (1927)
†Hosei-Daigaku-Toshokan, Fujimi-Cho, Kojimachi, Tokyo, Japan.
Hotchkiss, Willard E., Graduate School of Business, Stanford University, Cal. (1902)
Hottenstein, M. S., 17 E. 42nd St., New York City. (1922)
*Houston, Samuel F., Chestnut Hill, Philadelphia, Pa. (1888)
†(Sam) Houston Normal Reading Room, Huntsville, Texas.

†Howard Memorial Library, New Orleans, La.
Howard, Clara E., 504 S. Franklin St., Kirksville, Mo. (1923)
Howard, Charles H., P. O. Box 276, Gettysburg, Pa. (1923)
Howard, Earl D., 1632 Sheridan Rd., Evanston, Ill. (1905)
Howard, Edwin H., 37 E. Franklin St., Hagerstown, Md. (1925)
Howard, Stanley E., 7 College Rd., Princeton, N. J. (1912)
Howd, Cloice R., University of Montana, Missoula, Mont. (1923)
Howe, Charles B., 265 Grant Ave., Highland Park, N. J. (1924)
†Hoyt Public Library, Saginaw, Mich.
Hoyt, Allen G., 150 W. 79th St., New York City. (1910)
Hoyt, Elizabeth E., Iowa State College, Ames, Iowa. (1925)
Huang, C., 1107 W. Main St., Urbana, Ill. (1927)
Huang, H. J., Furnald Hall, Columbia University, New York City. (1927)
Hubbard, F. Morse, 49 Wall St., New York City. (1923)
Hubbard, Joseph B., Committee on Economic Research, Harvard University, Cambridge 38, Mass. (1914)
Hubbell, James F., 301-306 Mayro Bldg., Utica, N. Y. (1916)
Hudgins, Houlder, Mandel Brothers, Chicago, Ill. (1927)
Hudson, William M., 281 Burns St., Forest Hills, L. I., N. Y. (1922)
Huebner, Grover G., Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1914)
Huebner, Solomon, 516 S. 44th St., Philadelphia, Pa. (1914)
Hughes, P., Southern Pacific Company, Room 511, 65 Market St., San Francisco, Cal. (1921)
Hulme, Thomas W., 701 Broad St. Station, Philadelphia, Pa. (1918)
Hummel, John J., 3707 Cecilia Ave., Cleveland, Ohio. (1923)
Hunt, Bishop C., Dalhousie University, Halifax, N. S. (1921)
Hunt, Rockwell D., University of Southern California, Los Angeles, Cal. (1908)
Hunt, William D., Box 1520, Care of Wright, Stephenson and Company, Ltd., Wellington, New Zealand. (1923)
Hunter, Merlin H., 209 Commerce Bldg., University of Illinois, Urbana, Ill. (1915)
Huntington, Charles C., Ohio State University, Columbus, Ohio. (1905)
Huntington, Emily H., 2527 Dwight Way, Berkeley, Cal. (1925)
Hurd, George E., Box 1777, Great Falls, Mont. (1905)
Hurd, Richard M., 56 Nassau St., New York City. (1923)
Hurley, S. C., 6 N. Michigan Blvd., Chicago, Ill. (1923)
Hurlin, Ralph G., Russell Sage Foundation, 130 E. 22nd St., New York City. (1921)
†Huron College Library, Huron, S. D.
Husband, William H., 24 Darlington Rd., Delaware, Ohio. (1927)
Huse, Charles P., 13 Pine St., Belmont, Mass. (1908)
Huston, Frank M., Federal Reserve Bank, P. O. Box 834, Chicago, Ill. (1911)
Hutchins, G. H., 61 Broadway, New York City. (1918)
Hutchinson, Emilie J., Barnard College, New York City. (1910)
Hutchinson, Mrs. Ruth G., 293 W. 11th St., New York City. (1923)
Hyde, Duncan C., Faculty of Economics, Keiogijuku University, Mita, Tokyo, Japan. (1921)
†Hyogoken-Kaikeika, Kobe, Japan.
†Idaho, University of, Moscow, Idaho.
†Iijima, M., No. 1-1326 Enomoto, Mikagecho, Mukogun, Hyogoken, Japan.
*Iles, George, Hotel Chelsea, 222 W. 23rd St., New York City. (1888)
†Illinois State Library, Springfield, Ill.
†Illinois State Normal University Library, Normal, Ill.
†Illinois Woman's College, Jacksonville, Ill.

†ILLINOIS, UNIVERSITY OF, LIBRARY, Urbana, Ill.
ILOTT, J. M. A., 246 b The Terrace, Wellington, New Zealand. (1921)
†IMAI, TSUNESABURO, Fuyacho-Anegakoji-Kita, Kyoto, Japan.
†IMPERIAL COLLEGE OF TROPICAL AGRICULTURE LIBRARY, Trinidad, British West Indies.
†IMPERIAL LIBRARY OF JAPAN, Uyeno Park, Tokyo, Japan.
†IMEPRIAL LIBRARY, LIBRARIAN, Calcutta, India.
†INDIANA STATE LIBRARY, State House, Indianapolis, Ind.
†INDIANA STATE NORMAL SCHOOL LIBRARY, Terre Haute, Ind.
†INDIANA UNIVERSITY LIBRARY, Bloomington, Ind.
†INDIANAPOLIS PUBLIC LIBRARY, Indianapolis, Ind.
†INDUSTRIAL COMMISSION OF WISCONSIN, Madison, Wis.
†INDUSTRIAL RELATIONS STAFF, Curtis, Fosdick, and Belknap, 165 Broadway, New York City.
INGALLS, WALTER R., 115 Broadway, New York City. (1918)
INGRAHAM, OLIN, 63 Dana St., Cambridge, Mass. (1926)
INNIS, HAROLD A., University of Toronto, Toronto, Ont., Canada. (1923)
†INSTITUT FUR ARBEITSKUNDE BIBLIOGRAPHISCHE ABTEILUNG, Hospitalny per 3, Charkow, Russia.
†INSTITUTE OF GEOGRAPHY, College of Science, Tokyo Imperial University, Tokyo, Japan.
†INSTITUTO ECONOMICO DELLA R. Universita di Padova, Padova, Italy.
*INSULL, SAMUEL, 72 W. Adams St., Chicago, Ill. (1900)
†INTERNATIONAL Y. M. C. A. COLLEGE, LIBRARY, Springfield, Mass.
INWOOD, ERNEST L., 255 University Terrace, Reno, Nev. (1926)
†IOWA STATE COLLEGE LIBRARY, Ames, Iowa.
†IOWA STATE LIBRARY, Economics and Sociology Department, Capitol Bldg., Des Moines, Iowa.
†IOWA STATE UNIVERSITY LIBRARY, Iowa City, Iowa.
IRVING, HERBERT S., 5830 Stony Island Blvd., Chicago, Ill. (1925)
†IRVING BANK-COLUMBIA TRUST COMPANY LIBRARY, 233 Broadway, New York City.
*IRWIN, DUDLEY M., Chamber of Commerce, Buffalo, N. Y. (1890)
IRWIN, HAROLD S., Grain Futures Administration, U. S. D. A., Room 717, Postal Telegraph Bldg., Chicago, Ill. (1928)
ISE, JOHN, R. F. D. 1, Lawrence, Kans. (1911)
ISRAEL, HENRY, Hastings-on-Hudson, N. Y. (1910)
†ISTITUTO SUPERIORE DI SCIENZE ECOMICHE E COMMERCIALI, Casella Postale, Genoa, Italy.
†IURA, SENTARO, Tokyo Commercial College, Kanda, Tokyo, Japan.
IVES, HENRY S., 2108 Sherman Ave., Evanston, Ill. (1923)
JACKMAN, WILLIAM T., University of Toronto, Toronto, Ont., Canada. (1910)
JACKSON, DONALD, 351 Harvard St., Cambridge, Mass. (1923)
JACKSON, DUGALD C., Massachusetts Institute of Technology, Boston, Mass. (1923)
JACKSON, D. HOWARD, R. F. D. #1, Whittier, Cal. (1926)
JACKSON, J. HUGH, Box 2428, Stanford University, Cal. (1917)
JACKSON, JAMES R., Evansville College, Evansville, Ind. (1927)
JACKSON, KATHLEEN C., Vassar College, Poughkeepsie, N. Y. (1927)
†JACKSONVILLE PUBLIC LIBRARY, Jacksonville, Fla.
JACOBS, THEO, 226 Sommersett Rd., Roland Park, Baltimore, Md. (1928)
JACOBSON, MAURICE L., Room 1707, 165 Broadway, New York City. (1894)
JAFFE, WILLIAM, 173 Boulevard St. Germain, Paris 6e, France. (1925)
JAMES, ALBERT C., Western Reserve University, Cleveland, Ohio. (1915)
JAMES, CLIFFORD L., 455 W. 8th Ave., Columbus, Ohio. (1927)
JAMES, GORTON, 3331 P St., N. W., Washington, D. C. (1925)

JAMISON, CHARLES L., 423 Sterling Hall, Madison, Wis. (1923)
JANES, GEORGE M., Kenyon College, Gambier, Ohio. (1909)
†JAPAN, BANK OF, (Lib M.), Nihonbashi, Tokyo, Japan.
JARRETT, JAMES M., Graduate College, Princeton, N. J. (1928)
JARVIS, N. LEONARD, 351 Armstrong Ave., Jersey City, N. J. (1926)
JEIDELS, OTTO, 32 Behrenstr., Berlin, Germany. (1911)
JENKINS, JOHN W., University of Georgia, School of Commerce, Athens, Ga. (1924)
JENKS, JEREMIAH W., Alexander Hamilton Institute, 13 Astor Pl., New York City. (1886)
JENNINGS, CHARLES E., South Norwalk, Conn. (1911)
JENNINGS, HENRIETTA C., Denbigh Hall, Bryn Mawr, Pa. (1927)
JENNINGS, W. W., 459 Woodland Ave., Lexington, Ky. (1923)
JENSEN, JENS P., Department of Economics, University of Kansas, Lawrence, Kans. (1919)
JEREMIAH, J., 117th W. 58 St., New York City. (1911)
JEROME, HARRY, R. F. D. 6 (Nakoma), Madison, Wis. (1917)
†JERSEY CITY, FREE LIBRARY, Jersey City, N. J.
JESNESS, O. B., 1497 Hythe St., St. Paul, Minn. (1920)
JETER, HELEN R., Box 157, Faculty Exchange, University of Chicago, Chicago, Ill. (1921)
†JEWISH PEOPLE'S INSTITUTE, Reference Library, 3500 Douglas Blvd., Chicago, Ill.
‡JEZE, GASTON, Universite de Paris, Paris, France. (1926)
JOCHER, KATHARINE, University of North Carolina, Box 711, Chapel Hill, N. C. (1926)
JOHANNSEN, N., Stapleton, N. Y. (1905)
JOHNSON, ALVIN, New School for Social Research, 465 W. 23rd St., New York City. (1927)
JOHNSON, E. C., University of Kentucky, Experiment Station, Lexington, Ky. (1925)
JOHNSON, EDGAR H., Emory University, Ga. (1910)
*JOHNSON, EMORY R., College Hall, University of Pennsylvania, Philadelphia, Pa. (1893)
JOHNSON, ERNEST A., Lake Forest College, Lake Forest, Ill. (1925)
JOHNSON, HOMER H., 1669 Union Trust Bldg., Cleveland, Ohio. (1913)
JOHNSON, JAMES G., University of Colorado, Boulder, Colo. (1924)
JOHNSON, LESTER D., 4831 36th St., N. W., Washington, D. C. (1924)
JOHNSON, OLIVER R., College of Agriculture, Columbia, Mo. (1922)
JOHNSON, PYKE, Transportation Bldg., Washington, D. C. (1923)
JOHNSON, RALPH R., Henry Birks and Sons, Ltd., Phillips Sq., Montreal, Canada. (1927)
JOHNSON, WILLIAM E., Smithville Flats, N. Y. (1904)
JOHNSTON, RICHARD H., Library, Bureau of Railway Economics, Washington, D. C. (1910)
†JOHNSTONE, H. M., 90 Trinity Pl., New York City.
JOME, HIRAM L., Department of Economics, Denison University, Granville, Ohio. (1924)
JONES, ANDRIEUS A., Senate Office Bldg., Washington, D. C. (1914)
JONES, BRECKENRIDGE, 45 Portland Pl., St. Louis, Mo. (1909)
JONES, EDWARD D., 162 Preston Rd., Columbus, Ohio. (1900)
JONES, ELIOT, Stanford University, Cal. (1909)
JONES, GEORGE T., Rockefeller Memorial, 61 Broadway, New York City. (1926)
JONES, GROSVENOR M., Bureau of Foreign and Domestic Commerce, Washington, D. C. (1920)
#JONES, JOHN G., 13 Astor Pl., New York City. (1915)
JONES, JOHN P., 1202 N. New St., Bethlehem, Pa. (1926)
JONES, MILTON F., Oliver Bldg., R. 418, 141 Milk St., Boston, Mass. (1912)
JONES, MONTFORT, University of Pittsburgh, Pittsburgh, Pa. (1922)
JONES, RALPH C., Box 658, Yale Station, New Haven, Conn. (1924)
JONES, REGINALD F., University of Manitoba, Winnipeg, Canada. (1922)
JORDAN, DAVID F., 32 Waverly Pl., New York City. (1924)
JORDAN, F. FREDERICK, Emery Candle Company, Cincinnati, Ohio. (1922)

†Jordan and Jordan, Fidelity Bldg., Portland, Me.
Joslyn, Carl S., 17 Commonwealth Rd., Watertown, Mass. (1925)
Joy, Aryness, Mount Holyoke College, South Hadley, Mass. (1926)
Juchhoff, Frederick, 1907 F St., N. W., Washington, D. C. (1920)
Jue, J. Hing, Banco Pou-Seng, S. A. R. L., Macau, China. (1919)
†Junior College of Connecticut, 1001 Fairfield Ave., Bridgeport, Conn.
Kahler, Clyde M., 204 Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1926)
Kahn, Montifiore, 118 W. 57th St., New York City. (1919)
*Kahn, Otto H., 52 William St., New York City. (1916)
†Kaigun-Keiri-Gakko, (Naval Accountant School), Tsukiji, Tokyo, Japan.
Kakushita, Y., Juppo Ryo, 18 Nicho-Me, Kobinatadai-Machi, Koishigawaku, Tokyo, Japan. (1927)
†Kalamazoo Public Library, Kalamazoo, Mich.
Kammeyer, J. E., College P. O. Box 367, Manhattan, Kans. (1923)
Kanakura, E., Jugo Ginko, Ltd., Kobe Branch, 35 Nakamachi, Kobe, Japan. (1924)
†Kansai Daigaku Senriyama, Mishimagun, Osakafu, Japan.
†Kansas City Public Library, 9th and Locust Sts., Kansas City, Mo.
†Kansas State Agricultural College Library, Manhattan, Kans.
†Kansas State Library, State House, Topeka, Kans.
†Kansas State Teachers College, Pittsburg, Kans.
†Kansas State Teachers College, Library, Hays, Kans.
†Kansas, University of, Library, Lawrence, Kans.
Kantor, Harry S., 945 Jackson Ave., New York City. (1922)
Kaplan, Abraham D., Box 641, Johns Hopkins University, Homewood, Baltimore, Md. (1923)
Karabasz, Victor S., 1518 N. Fourth St., Philadelphia, Pa. (1925)
*Karelsen, Eph. A., 1440 Broadway, New York City. (1919)
Karelsen, Frank E., Jr., 1130 Park Ave., New York City. (1922)
Kattenhorn, Arthur W., 195 Broadway, New York City. (1925)
†Kawakami, Yoshiye, Sumitomo Bank, Kitahama, Higashiku, Osaka City, Japan.
Kayden, Eugene M., University of the South, Sewanee, Tenn. (1922)
Kearney, A. T., 5555 Everett Ave., Chicago, Ill. (1927)
Keary, William J., J. and W. Seligman and Company, 54 Wall Street, New York City. (1925)
Keator, Charles E., Hempstead, N. Y. (1918)
Keays, Eldred M., Second Ward Savings Bank, Milwaukee, Wis. (1911)
Keene, Alden V., 40 Fayette St., Watertown, Mass. (1921)
Keezer, Dexter M., 1843 S St., N. W., Washington, D. C. (1925)
†Keiogijuku, Library, Mita, Shiba, Tokyo, Japan.
Keir, John S., Dennison Manufacturing Company, Framingham, Mass. (1926)
Keir, Malcolm, Dartmouth College, Hanover, N. H. (1921)
†Keirstead, Wilfred C., 321 Northumberland St., Fredericton, N. B., Canada.
Keister, Albert S., N. C. College for Women, Greensboro, N. C. (1924)
Kelleher, D. M., Fort Dodge, Iowa. (1919)
Kelley, Nicholas, 80 Broadway, New York City. (1927)
†Kellogg Library, Kansas State Teachers College, Emporia, Kans.
Kellogg, Lester S., Northwestern University, Evanston, Ill. (1928)
†(Hiram) Kelly Branch Library, 62nd St. and Normal Blvd., Chicago, Ill.
Kelsey, Carl, Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1909)
Kemmerer, Donald L., 73 Blair Hall, Princeton, N. J. (1927)

KEMMERER, EDWIN W., Princeton University, Princeton, N. J. (1903)
KEMP, HERBERT R., University of Toronto, Toronto, Ont., Canada. (1923)
KENDRICK, M. SLADE, 402 Stewart Ave., Ithaca, N. Y. (1922)
KENNEDY, FRANCIS W., 78 Circular St., Tiffin, Ohio. (1923)
†KENTUCKY AGRICULTURAL EXPERIMENT STATION LIBRARY, Lexington, Ky.
†KENTUCKY, UNIVERSITY OF, LIBRARY, Lexington, Ky.
†KENYON COLLEGE LIBRARY, Gambier, Ohio.
†KERESKEDELMI ES IPARKAMARA, V. Szemere ucca 6, Budapest, Hungary.
†KERN COUNTY FREE LIBRARY, Bakersfield, Cal.
KERRY, A. S., JR., 421 W. Highland Drive, Seattle, Wash. (1927)
KESSLER, GEORGE, Y. M. C. A. Bldg., 2504 Howard St., San Francisco, Cal. (1925)
*KEYNES, JOHN N., 6 Harvey Rd., Cambridge, England. (1888)
KIBLER, THOMAS L., College of Commerce and Journalism, Ohio State University, Columbus, Ohio. (1911)
#KIEKHOFER, WILLIAM H., 1919 Arlington Pl., Madison, Wis. (1914)
KIFER, RUSSELL S., Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C. (1924)
†KIKUCHI, CHUZABURO, No. 14, Ichigaya Tomishisa-Cho, Ushigome, Tokyo, Japan.
KILBORN, RUSSELL D., Hanover, N. H. (1922)
KILLOUGH, LUCY W., 8 Glendale Ave., Providence, R. I. (1921)
KIMBALL, MILO, Ohio University, Athens, Ohio. (1921)
KINCAID, E. A., University, Va. (1922)
KING, CLYDE L., Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1921)
KING, C. T., National Fire Insurance Company of Hartford, Hartford, Conn. (1923)
KING, WILLFORD I., 76 S. 23rd St., Flushing, N. Y. (1911)
KINGSBURY, LAURA M., 845 W. Rose St., Stockton, Cal. (1924)
KINGSBURY, SUSAN M., 219 Roberts Rd., Bryn Mawr, Pa. (1910)
#KINLEY, DAVID, University of Illinois, Champaign, Ill. (1890)
KINMONTH, J. LYLE, Ivy Hedge, Asbury Park, N. J. (1913)
*KINOSITA, YETARO, No. 154, Imasatocho, Shirokane, Shibaku, Tokyo, Japan. (1904)
*KINSEY, OLIVER P., 1079 17th Ave., N., St. Petersburg, Fla. (1911)
KINSMAN, DELOS O., American University, Washington, D. C. (1926)
KIPLINGER, WILLARD M., 412 Albee Bldg., Washington, D. C. (1924)
KIRK, LESTER K., Bureau of Business Research, University of Detroit, Detroit, Mich. (1927)
KIRK, WILLIAM, Pomona College, Claremont, Cal. (1903)
KIRKPATRICK, C. D., Walden Farm, Keota, Iowa. (1918)
KIRSH, BENJAMIN S., 111 Broadway, New York City. (1927)
KIRSHMAN, JOHN E., University of Nebraska, Station A, Lincoln, Neb. (1918)
KIRSTEIN, LOUIS E., 416 Washington St., Boston, Mass. (1909)
KLAMON, JOSEPH M., Carnegie Institute of Technology, Pittsburgh, Pa. (1924)
KLARAGARD, SEVER, 1118 St. Olaf Ave., Northfield, Minn. (1921)
KLEE, MAX, 1340 E. 48th St., Chicago, Ill. (1925)
KLEENE, GUSTAV A., Trinity College, Hartford, Conn. (1898)
KLEIN, JOSEPH J., 19 W. 44th St., New York City. (1909)
KLEIN, JULIUS, Cosmos Club, Washington, D. C. (1911)
KNAPP, JOSEPH G., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1927)
KNAUTH, OSWALD W., 27 W. 67th St., New York City. (1911)
KNEELAND, HILDEGARDE, Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C. (1924)
KNIGHT, FRANK H., University of Chicago, Chicago, Ill. (1915)

KNIGHT, MELVIN M., American University Union, 173 Bd. St. Germain VI, Paris, France. (1924)
KNOPF, ALFRED A., 730 5th Ave., New York City. (1922)
KNOX, FRANK A., Queen's University, Department of Economics, Kingston, Ont., Canada. (1926)
†KNOX COLLEGE LIBRARY, Galesburg, Ill.
†KOBE HIGHER COMMERCIAL SCHOOL, Kobe, Japan.
KOCH, FRANK, 726 Westgate, University City, Mo. (1924)
KOCHENDERFER, C. C., 34 Cedar Blvd., Mt. Lebanon, Pittsburgh, Pa. (1915)
KODERA, SHUZO, 206 S. 41st St., Philadelphia, Pa. (1928)
†KODERA, Y., 5 Chome, Kumachi-Machi, Kobe, Japan.
†KOEHLERS, K. F., Antiquarium, Taubchenweg 21, Leipzig, Germany.
KOENIG, PAUL L., 105 S. 15th St., Camp Hill, Pa. (1924)
KOHANOWSKY, NICHOLAS, University, Riga, Latvia. (1926)
KOHLER, MAX J., Suite 313-314, 25 W. 43rd St., New York City. (1902)
KOHN, ROBERT D., 56 W. 45th St., New York City. (1921)
KOLCHIN, MORRIS, 610 W. 141st St., New York City. (1917)
KOMASAKI, TOSHIO, Meiji Life Assurance Society, Marunouchi, Tokyo, Japan. (1923)
†KOMMAKADEMIIA PRI Z. I. K. SSSR, Znamemka, II, Moscow, Russia.
KONDRATIEFF, NICOLAS D., Konjunctural Institute Ilenka 9, Moscow, Russia. (1925)
*KOTANY, LUDWIG, 6101 Kingsbury Blvd., St. Louis, Mo. (1909)
KOUKOURAS, ARISTIDES, 221 Shawmut Ave., Boston, Mass. (1927)
KOZELKA, RICHARD L., School of Business Administration, University of Minnesota, Minneapolis, Minn. (1923)
KREBS, WILLIAM S., Washington University, St. Louis, Mo. (1915)
KREPS, THEODORE J., 139 Mt. Auburn St., Cambridge, Mass. (1925)
KRUEGER, LEONARD B., 42 N. Cedar St., Oberlin, Ohio. (1920)
KUHLMANN, C. B., 4026 Vincent Ave., S., Minneapolis, Minn. (1925)
†KUMAGAI, SHUNTARO, Teramachi-Anegakoji-Kita, Kyoto, Japan.
KUSIK, JOHN E., Esthonian Consulate, 1650 Broadway, New York City. (1925)
KUTZLEB, WALTER, 15 Nassau St., New York City. (1927)
KUVIN, LEONARD, 693 Orange St., New Haven, Conn. (1927)
†KWANSEI GAKUIN LIBRARY, Kobe, Japan.
†KYO-CHO-KAI, Shiba Park, Shiba, Tokyo, Japan.
†KYOTO IMPERIAL UNIVERSITY, Kyoto, Japan.
KYRK, HAZEL, 5715 Kimbark Ave., Chicago, Ill. (1920)
KYSOR, DANIA, 653 Mansfield Pl., Brooklyn, N. Y. (1927)
†KYUSHU IMPERIAL UNIVERSITY, Literature and Law Departments, Fukuoka, Japan.
†LA PRENSA OF BUENOS AIRES, Director, Avenida de Mayo, Buenos Aires, Argentina.
†LABORATORIO ECONOMICA POLITICA, Via Po 18, Turin II, Italy.
LACEY, ELISABETH V., Cheyenne, Wyo. (1927)
LACEY, MARY G., 3707 35th St., N. W., Washington, D. C. (1924)
†LAFAYETTE COLLEGE LIBRARY, Easton, Pa.
LAGERQUIST, WALTER E., Bellair Drive, Dobbs Ferry, N. Y. (1910)
LAHEE, ARNOLD W., University of Minnesota, Minneapolis, Minn. (1928)
LAIDLER, HARRY W., 70 5th Ave., New York City. (1924)
LAIRD, NOEL P., Franklin and Marshall College, Lancaster, Pa. (1927)
†LAKE FOREST COLLEGE LIBRARY, Lake Forest, Ill.
LAL, MANOHAR, Minister for Education, Punjab, Lahore, India. (1911)
LAMADRID Y LARRIBA, LUCAS, Metropolitan Bldg., 636-638, Havana, Cuba. (1911)
LAMB, ROBERT K., Stoneleigh Court, Washington, D. C. (1928)

Lambert, R. M., 3024 Fairfield Ave., Cincinnati, Ohio. (1918)
Lamont, Thomas W., 23 Wall St., New York City. (1918)
Lampen, Dorothy, Box 685, Johns Hopkins University, Baltimore, Md. (1927)
Lancaster, Linda, 2610 Wichita St., Austin, Texas. (1927)
Landau, Sara, University of Louisville, Louisville, Ky. (1927)
Lane, Alfred C., 22 Arlington St., Cambridge, Mass. (1924)
Lane, Mortimer B., Bureau of the Census, Washington, D. C. (1925)
Lanfear, Vincent W., School of Business, University of Pittsburgh, Pittsburgh, Pa. (1920)
Langmas, Arthur F., 600 Spring St., Pullman, Wash. (1927)
Langmuir, Dean, Scudder, Stevens and Clark, 111 Broadway, New York City. (1913)
Langshaw, Walter H., Dartmouth Manufacturing Corporation, New Bedford, Mass. (1923)
Langston, L. H., Apt. 23, 423 W. 120th St., New York City. (1919)
Larkin, Thomas E., 935 Woodward Bldg., Washington, D. C. (1924)
Lashmet, Paul, 232 Westminster St., Jacksonville, Ill. (1927)
Latimer, Murray W., Industrial Relations Counselors, Inc., 165 Broadway, New York City. (1925)
Latour, C. C., 10 Meadway, Bronxville, N. Y. (1922)
Lattimer, Gardner, Lattimer Stevens Company, Columbus, Ohio. (1923)
Laughlin, Harry H., Cold Spring Harbor, Long Island, N. Y. (1925)
Laughlin, J. Laurence, 2219 California St., N. W., Washington, D. C. (1904)
Laures, John, Jochi Daigaku, Kojimachi Kioicho 7, Tokyo, Japan. (1928)
†Law, Narendra N., 96 Amherst St., Calcutta, India.
Lawall, William P., Box 203, Hazleton, Pa. (1912)
†Lawrence College Library, Appleton, Wis.
Lawrence, Joseph S., Princeton University, 54 Blair Hall, Princeton, N. J. (1928)
Lawrie, Harold N., 3102 33rd Pl., N. W., Washington, D. C. (1924)
Lay, Chester F., University of Texas, School of Business Administration, Austin, Texas. (1928)
Lay, Tracy, 1731 Columbia Rd., Washington, D. C. (1921)
†Lazard Brothers and Co., 120 Broadway, New York City.
Leacock, Stephen B., McGill University, Montreal, Que., Canada. (1912)
Leake, Howard D., 908 Irving St., Edgewood, Birmingham, Ala. (1927)
Lear, J. Merritt, Box 727, Chapel Hill, N. C. (1924)
Learned, Edmund P., Harvard Business School, Soldiers Field, Boston, Mass. (1923)
Leatherman, George A., Department of Economics and Commerce, University of Chattanooga, Chattanooga, Tenn. (1923)
Lee, Ivy L., 111 Broadway, New York City. (1904)
Lee, Judson F., Lewis Institute, Madison and Robey Sts., Chicago, Ill. (1918)
Lee, Ralph M., Mars Hill, N. C. (1927)
Lee, Virgil P., Department of Marketing and Finance, College Station, Texas. (1926)
Leese, Charles, Clarkson College, Potsdam, N. Y. (1927)
*Leeson, Joseph R., 95 South St., Boston, Mass. (1890)
†Leete, P. C. A., P. O. Box 451, Stamboul, Constantinople, Turkey.
Lefavour, Henry, 119 Bay State Rd., Boston, Mass. (1911)
§Leffingwell, R. C., 23 Wall St., New York City. (1921)
Leffler, Ray V., Box 196, Hanover, N. H. (1920)
†Legislative Library, Parliament Bldg., Regina, Sask., Canada.
†Legislative Reference Bureau, Station A., Lincoln, Neb.
†Legislative Reference Bureau, Springfield, Ill.

†Legler Regional Branch Library, Chicago Public Library, Crawford Ave. and Monroe St., Chicago, Ill.

Leib, Karl E., College of Business Administration, University of Washington, Seattle, Wash. (1921)

Leigh, Warren W., Municipal University of Akron, Akron, Ohio. (1926)

Leighton, J. Herbert, American Telephone and Telegraph Company, 195 Broadway, New York City. (1927)

Leininger, Grace C., 2315 Sherman Ave., Evanston, Ill. (1928)

Leiserson, William M., Antioch College, Yellow Springs, Ohio. (1915)

Leland, Simeon E., University of Kentucky, Lexington, Ky. (1921)

Lenroot, Katherine F., 506, The Woodward, 2311 Connecticut Ave., Washington, D. C. (1923)

Leonard, Eugene O., Box 548, Pocatello, Idaho. (1915)

Leonard, J. L., Wabash College, Crawfordsville, Ind. (1927)

Leonard, Russell H., Pepperell Manufacturing Company, 160 State St., Boston, Mass. (1921)

Le Rossignol, James E., Station A., Lincoln, Neb. (1896)

Leschohier, Don D., 2117 Chadbourne Ave., Madison, Wis. (1913)

Lesher, Carl E., Pittsburgh Coal Company, Pittsburgh, Pa. (1921)

Leven, Maurice, 556 Sanford Ave., Flushing, L. I., N. Y. (1926)

Levin, Samuel M., 2508 Pingree St., Detroit, Mich. (1921)

Levy, Saul, 475 Fifth Ave., New York City. (1917)

Levy, S. Leon, 1118 N. La Salle St., Chicago, Ill. (1917)

Lewis, Ben W., 37 Gorham St., Cambridge, Mass. (1923)

Lewis, Carleton K., 252 Walnut St., Clarendon, Va. (1920)

Lewis, Clarence M., 43 Cedar St., New York City. (1927)

Lewis, L. B., F. N. Joslin and Company, Malden, Mass. (1918)

†Lewis Institute Library, Care of Mr. F. L. Talcott, Madison and Robey Sts., Chicago, Ill.

*Lewisohn, Adolph, 61 Broadway, New York City. (1921)

Lewisohn, Sam A., 61 Broadway, New York City. (1912)

Li, Kuan C., Sung Po Library, 7 Shih Hu Huting, West City, Peking, China. (1923)

†Librarian, Carnegie Institute of Technology, Schenley Park, Pittsburgh, Pa.

†Librarian, Commonwealth Parliament, Canberra, Federal Territory, Australia.

†Librarian, Department of State, Washington, D. C.

†Librarian, Provincial Library, Winnipeg, Man., Canada.

†Librarian, Q. M. Corps School, Phila. Q. M. I. Depot, 2620 Grays Ferry Rd., Philadelphia, Pa.

†Library, High School Bldg., Independence, Kans.

†Library, Kunsatsuin-Shitsu S. K. 4, South Manchuria Railway Company, Dairen, Manchuria.

†Library, (C. L. 112) South Manchuria Railway Company, Dairen, Manchuria.

†Library, American Studies in Rome, 271 Corso Umberto, Rome, Italy.

†Library, La Universitato Utopia, Shanghai, China.

†Library of College of Law and Literature, Sendai, Japan.

†Library of Congress, Order Division, Washington, D. C.

†Library of Congress, Periodical Division, Washington, D. C.

†Library of Parliament, Ottawa, Ont., Canada.

†Libreria A. Draghi, Via Cavour 9, Padova, Italy.

†Libreria Minerva, gia Bemporad, Napoli, Italy.

†Libreria G. Muglia, Via Etnea, 134 Catania, Italy.

Lichtenstein, Walter, First National Bank, Chicago, Ill. (1921)

Lichtstern, Adolph J., 967 The Rookery, Chicago, Ill. (1925)
Liebes, Leon, 167 Post St., San Francisco, Cal. (1913)
Liebmann, Charles J., 907 5th Ave., New York City. (1911)
†Lietuvos Universitetas, Kaunas, Lithuania.
†Lima, J. T. de Alencar, Rua do Ouvidor# 4, Rio de Janeiro, Brazil, S. A.
Liming, Melville D., Chamber of Commerce, 177 Milk St., Boston 9, Mass. (1922)
Lin, Hsi-Cheah, 314 S. Linn, Iowa City, Iowa. (1927)
Lincoln, Edmund E., Apt. 5A, 400 Riverside Drive, New York City. (1914)
†Lincoln City Library, Lincoln, Neb.
†Lindenwood College for Women Library, St. Charles, Mo.
*Lindsay, Samuel M., 611 Kent Hall, Columbia University, New York City. (1894)
Lines, George, 417 Lake Drive, Milwaukee, Wis. (1914)
†Lingnan University Library, Canton, China.
Lipman, F. L., Wells Fargo Bank and Union Trust Company, San Francisco, Cal. (1894)
Lippincott, Harold E., 40 Wall St., New York City. (1898)
Lippincott, I., Washington University, St. Louis, Mo. (1911)
†Litizdat NKID, Kuznetsky 5/15, Moscow, Russia.
Litman, Simon, University of Illinois, Urbana, Ill. (1909)
†Little Rock Public Library, Little Rock, Ark.
Liu, C. T., Care of N. T. Chao, Box 438, Teachers College, Columbia University, New York City. (1926)
Livingston, George, 601 Second Ave., S., Minneapolis, Minn. (1921)
Llewellyn, Karl N., 110 Library Bldg., Columbia University, New York City. (1923)
Lloyd, Ernest F., 1033 Baldwin Ave., Ann Arbor, Mich. (1925)
Lloyd, O. G., Agricultural Experiment Station, Purdue University, Lafayette, Ind. (1911)
Locke, George H., The Public Library, Toronto, Canada. (1911)
Lockhart, Oliver C., 25 Niagara Square, Buffalo, N. Y. (1904)
Locklin, D. Philip, 605½ Indiana Ave., Urbana, Ill. (1922)
Lockwood, Jeremiah, Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1921)
Loeb, Isidor, Washington University, St. Louis, Mo. (1892)
Logan, H. A., Randolph-Macon Woman's College, Lynchburg, Va. (1920)
Logan, Leonard M., Jr., Sterling Hall, University of Wisconsin, Madison, Wis. (1927)
Lombard, Norman, Stable Money Association, Room 1403, 104 5th Ave., New York City. (1927)
†Long Beach Public Library, Long Beach, Cal.
Long, Dean, 706 S. Locust St., Greencastle, Ind. (1928)
Long, Lewis E., A. and M. College, Miss. (1924)
Long, Thomas G., 1436 Chicago Blvd., Detroit, Mich. (1924)
Longobardi, Cesare, International Institute of Agriculture, Rome, Italy. (1923)
Loomis, Robert H., 190 Forest Ave., West Newton 65, Mass. (1915)
Lopez, Jose L., Medellin, Colombia, S. A. (1924)
Lorentzen, Eden C., 1056 Barbara Pl., Salt Lake City, Utah. (1926)
Lorenz, M. O., 3510 Porter St., N. W., Washington, D. C. (1905)
‡Loria, A., Universita di Torino, Turin, Italy. (1926)
Lorwin, Lewis, Institute of Economics, 26 Jackson Pl., Washington, D. C. (1916)
†Los Angeles Public Library, 530 S. Hope St., Los Angeles, Cal.
Lotka, Alfred J., Statistical Bureau, Metropolitan Life Insurance Company, 1 Madison Ave., New York City. (1918)
Loucks, W. N., Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1925)
Lough, W. H., Jr., 347 Madison Ave., New York City. (1908)
†Louisville Free Public Library, 4th and Library Pl., Louisville, Ky.

Love, C. Morup N., Wilbur, Wash. (1918)
Love, Robert A., 517 W. 135th St., New York City. (1925)
Lovejoy, Frank W., 56 Berkeley St., Rochester, N. Y. (1914)
Lowden, Frank O., Oregon, Ill. (1901)
#Lowenthal, Esther, 76 Crescent St., Northampton, Mass. (1910)
Lowry, John C., 1900 Rittenhouse Square, Philadelphia, Pa. (1889)
†Loyola University, Students Library, Room 23, New Orleans, La.
†Loyola University, Loyola Ave., and Sheridan Rd., Chicago, Ill.
Lubin, Louis, 111 Broadway, New York City. (1911)
Lucas, Arthur F., 27 Lovell St., Worcester, Mass. (1921)
Luce, Robert, Room 238, House Office Bldg., Washington, D. C. (1911)
Luck, Thomas S., Commerce Hall, Indiana University, Bloomington, Ind. (1921)
†Lucknow, University of, Library, Lucknow, India.
†(Roger) Ludlowe High School, Fairfield, Conn.
Luken, O. H., Zimmerstr. 71, Berlin, S. W. 68, Germany. (1920)
Lum, Charles M., Prudential Bldg., Newark, N. J. (1910)
Lund, Fin, Consulate of Denmark, 220 Montgomery St., San Francisco, Cal. (1919)
Lundkvist, Emil A., University of Washington, Seattle, Wash. (1927)
Lutz, Charles A., 42 Erwin Park Rd., Montclair, N. J. (1911)
Lutz, Harley L., 1400 Webster St., Palo Alto, Cal. (1910)
Lyman, Herbert, Room 441, 18 Tremont St., Boston, Mass. (1909)
Lynd, Robert S., 125 W. 75th St., New York City. (1928)
Lyon, Hastings, 50 Broadway, New York City. (1912)
Lyon, Leverett S., 26 Jackson Pl., N. W., Washington, D. C. (1923)
Lytton, George, The Hub, Chicago, Ill. (1918)
#McAleer, Charles L., 206 Clark Rd., Brookline, Mass. (1919)
McAlpin, David, III, 145 E. 54th St., New York City. (1927)
McBurney, Benjamin T., 225 E. 4th Street, Cincinnati, Ohio. (1914)
McCabe, David A., 243 Cuyler Hall, Princeton, N. J. (1909)
McCabe, George K., 1913 Yale Station, New Haven, Conn. (1924)
McCartney, Ernest R., 306 College St., Winfield, Kans. (1928)
McCarty, Harold H., College of Commerce, University of Iowa, Iowa City, Iowa. (1926)
McCarty, Harry C., 24 Storer Ave., Pelham, N. Y. (1915)
McClean, Lee D., 388 N. Main St., Meadville, Pa. (1920)
McClellan, George B., Princeton University, Princeton, N. J. (1913)
McClendon, E. M., Box 103, Stanford University, Cal. (1926)
McCluer, Franc L., Fulton, Mo. (1924)
McClung, R. L., University of Southern California, Los Angeles, Cal. (1915)
McClure, Wallace, Department of State, Washington, D. C. (1923)
McConagha, W. A., Lawrence College, Appleton, Wis. (1925)
McCormick, Robert R., Caldwell, Idaho. (1921)
McCracken, Duane, Guilford College, N. C. (1924)
McCracken, H. L., Penn College, Oskaloosa, Iowa. (1921)
McCrea, Roswell C., Columbia University, New York City. (1899)
McDonald, Jesse, Third National Bank Bldg., St. Louis, Mo. (1911)
McDonald, J. Lee, Hanover, N. H. (1925)
McDonough, Charles A., 18 Tremont St., Boston, Mass. (1914)
McDonough, John E., 107 Whitney Ave., New Haven, Conn. (1920)
McElheny, Victor K., Jr., 204 Franklin St., New York City. (1916)
†McEnerney, Garret W., 2002 Hobart Bldg., San Franisco, Cal.

McFall, Robert J., Domestic Commerce Div., Bureau of For.and Dom. Com., Washington, D. C. (1916)
McGarry, Edmund D., University of Buffalo, Buffalo, N. Y. (1923)
McGaughy, James Ralph, 525 W. 120th St., New York City. (1926)
†McGill University Library, Montreal, Canada.
McGoldrick, Joseph, 596 Madison St., Brooklyn, N. Y. (1922)
McGoun, A. F., 37 Upper Bellevue Ave., Montreal, Que., Canada. (1924)
McGrath, W. H., 1653 Federal Avenue, Seattle, Wash. (1919)
McGregor, R. R., Room 1213, 79 W. Monroe St., Chicago, Ill. (1927)
McGregor, Tracy W., 1453 Brush St., Detroit, Mich. (1912)
McGuire, Constantine E., Cosmos Club, 1520 H St., Washington, D. C. (1922)
McIsaac, Archibald M., 206 Nassau St., Princeton, N. J. (1925)
McJohnston, Harrison, 1809 Livingston St., Evanston, Ill. (1916)
McKay, M. K., University of Pittsburgh, Pittsburgh, Pa. (1921)
McKee, John M., Harrisburg, Pa. (1924)
McKnight, C. W., 219 W. Elm St., Mason City, Ill. (1922)
McLaren, James R., 611 Court Street, Brooklyn, N. Y. (1917)
McLaren, W. W., Williams College, Williamstown, Mass. (1911)
McLaughlin, J. A., 1517 Vermont Ave., N. W., Washington, D. C. (1914)
McLean, Francis H., 130 E. 22nd St., New York City. (1898)
McLean, George, Dubuque, Iowa. (1921)
McLean, Simon J., Board of Railway Commissioners, Ottawa, Ont., Canada. (1900)
McMahon, Mrs. Theresa S., University of Washington, Seattle, Wash. (1913)
McManus, T. F., Freyschlag Ins., Agency, Eastland, Texas. (1926)
†McMaster University Library, Toronto, Ont., Canada.
McNair, Malcolm P., Harvard Business School, Cambridge, Mass. (1924)
McNall, Preston E., Department of Agricultural Economics, Madison, Wis. (1920)
McNaughton, Floyd, 130 Mayfield Ave., N. E., Grand Rapids, Mich. (1923)
McNeill, Clarence E., University of Nebraska, Lincoln, Neb. (1919)
McPherson, William H., 198 16th Ave., Columbus, Ohio. (1923)
McQueen, Robert, University of Saskatchewan, Saskatoon, Sask., Canada. (1925)
McRaith, Michael A., College of St. Thomas, St. Paul, Minn. (1923)
McReynolds, Frederick W., 3241 R St., N. W., Washington, D. C. (1918)
McVey, Frank L., University of Kentucky, Lexington, Ky. (1895)
†Macalester College Library, St. Paul, Minn.
Macaulay, Fred R., 474 W. 24th St., New York City. (1919)
Macdonald, Elizabeth S., 118 Highland St., Hyde Park, Mass. (1925)
MacDonald, W. E., 3312 N. 15th St., Philadelphia, Pa. (1926)
*MacDuffie, John, 182 Central St., The MacDuffie School, Springfield, Mass. (1893)
Mace, Almon G., Lexington, Ind. (1925)
MacFadden, Frederick A. R., Green Villa, Madison, N. J. (1926)
MacFarland, Charles S., 105 E. 22nd St., New York City. (1912)
MacFarland, George A., 216 Greenwood Ave., Jenkintown, Pa. (1918)
Macfarlane, John J., The Philadelphia Museum, 34th St. below Spruce, Philadelphia. Pa. (1907)
MacGibbon, Duncan A., University of Alberta, Edmonton, Alta., Canada. (1911)
MacGregor, Frank S., Harper and Bros., 49 E. 33rd St., New York City. (1924)
MacKinnon, Joseph C., Massachusetts Inst. of Technology, Cambridge, Mass. (1927)
Mackintosh, W. A., Queen's University, Kingston, Ont., Canada. (1918)
Macklin, Theodore, College of Agriculture, Madison, Wis. (1917)
MacLaughlin, Raymond W., 225 Sydney St., Mt. Airy, Philadelphia, Pa. (1927)

MacMillan, Mrs. Pauline W., 519 Munsey Bldg., Washington, D. C. (1925)
MacMillin, Frederick N., Municipal Reference Library, City Hall, Milwaukee, Wis. (1926)
MacVeagh, Franklin, 333 W. Lake St., Chicago, Ill. (1900)
*Macy, V. Everit, 68 Broad St., New York City. (1899)
Madden, John T., 32 Waverly Pl., New York City. (1920)
†Madera County Free Library, Madera, Cal.
†Madison Club, 5 E. Wilson St., Madison, Wis.
†Madras, University of, Professor of Indian Economics, Senate House, Madras, India
Magee, James D., New York University, Washington Square, New York City. (1911).
Magee, Mabel A., University of Chicago, Faculty Exchange, Chicago, Ill. (1925)
Magnusson, Leifur, 701 Lenox Bldg., Washington, D. C. (1924)
Maher, Amy G., 2160 Glenwood Ave., Toledo, Ohio. (1925)
Mahone, Albert W., 10 S. La Salle St., Chicago, Ill. (1917)
Main, Frank W., Farmers Bank Bldg., Pittsburgh, Pa. (1924)
†Maine, University of, Library, Orono, Me.
†Makay, A. F., Lafayette Ave., Sea Cliff, N. Y.
Maling, Ernest H., 29 Longfellow St., Portland, Me. (1920)
Mallery, Otto T., 112 S. 16th St., Philadelphia, Pa. (1926)
Malott, Deane W., 17 University Hall, Cambridge, Mass. (1926)
#Malott, J. O., Department of Interior, Bureau of Education, Washington, D. C. (1927)
Maltbie, Milo R., 210 Riverside Drive, New York City. (1898)
†Manchester City Library, Manchester, N. H.
†Manchester College Library, North Mancheser, Ind.
Mangold, George B., 4002 Lexington Ave., St. Louis, Mo. (1910)
†Manitoba Agricultural College Library, Winnipeg, Man., Canada.
†Manitoba Co-operative Wheat Producers, 9th Floor, Electric Ry. Chambers, Winnipeg, Man., Canada.
†Manitoba, University of, Library, Kennedy St., Winnipeg, Man., Canada.
†Mankato Free Public Library, Mankato, Minn.
Manley, Edward, 6131 Greenwood Ave., Chicago, Ill. (1916)
Manley, Louis K., University of Pittsburgh, Pittsburgh, Pa. (1923)
Manly, Lewis F., Tufts College, Mass. (1928)
Mann, Lawrence B., 2210 Cathedral Ave., Washington, D. C. (1924)
Manning, William R., 4701 Fessenden St., N. W., Washington, D. C. (1927)
†Manufacturers and Traders Trust Company, Attention of Volney Parker, Main at Swan St., Buffalo, N. Y.
Marble, John M., 24 Holden Green, Cambridge, Mass. (1927)
*Marburg, Theodore, 14 W. Mt. Vernon Pl., Baltimore, Md. (1890)
Marget, Arthur W., University of Minnesota, Campus Club, Minneapolis, Minn. (1926)
†Marietta College Library, Marietta, Ohio.
Mark, Mary Louise, Department of Sociology, Ohio State University, Columbus, Ohio. (1912)
Markham, C. H., 135 Park Row, Chicago, Ill. (1911)
Marlatt, Abby L., 612 Howard Pl., Madison, Wis (1924)
Marquette, A. F., 62 Warwick Rd., Winnetka, Ill. (1928)
Marsh, C. S., University of Buffalo, Buffalo, N. Y. (1926)
†Marshall College, Huntington, W. Va.
Marshall, Herbert, Dominion Bureau of Statistics, Ottawa, Ont., Canada. (1920)
Marshall, Herbert C., 1829 Kilbourne Pl., N. W., Washington, D. C. (1924)
Marshall, Leon C., University of Chicago, Chicago, Ill. (1904)

MARSHALL, MRS. MARY, Balliol Croft, 6 Madingley Rd., Cambridge, England. (1925)
MARSTON, OLIVER J., 1186 W. 31st Street, Los Angeles, Cal. (1919)
MARTIN, IRVING, 923 N. Van Buren St., Stockton, Cal. (1928)
MARTIN, JAMES W., Emory University, Ga. (1923)
MARTIN, LESTER F., R. H. Donnelley Corp., Nevada, Iowa. (1924)
MARTIN, OSCAR R., University of Nebraska, Lincoln, Neb. (1911)
MARTIN, R. W., 28 Nassau St., New York City. (1905)
MARTIN, SELDEN O., 700 Esplanade, Pelham Manor, N. Y. (1904)
MARTIN, WILLIAM M., Federal Reserve Bank, St. Louis, Mo. (1910)
†MARUZEN COMPANY, Sapporo Branch Library, Sapporo, Hokkaido, Japan.
MARVIN, CORNELIA, Oregon Library Commission, State House, Salem, Ore. (1908)
MARVIN, DONALD M., Foreign Trade Department, Royal Bank of Canada, Montreal Canada. (1925)
†MARYLAND, UNIVERSITY OF, LIBRARY, College Park, Md.
#MASON, ARTHUR J., Homewoood, Ill. (1921)
MASON, AUGUSTUS L., 1006 N. Delaware St., Indianapolis, Ind. (1904)
MASON, DAVID T., Northwestern National Bank Bldg., Portland, Ore. (1921)
MASON, EDWARD S., Harvard University, Cambridge, Mass. (1925)
MASON, M. PHILLIPS, Bowdoin College, Brunswick, Me. (1916)
MASOR, ANTON, 2701 Grand Concourse, New York City. (1926)
†MASSACHUSETTS AGRICULTURAL COLLEGE LIBRARY, Amherst, Mass.
†MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Massachusetts Ave., Cambridge, Mass.
†MASSACHUSETTS STATE LIBRARY, State House, Boston, Mass.
MASSON, ROBERT L., University of Michigan, Ann Arbor, Mich. (1923)
MATHERLY, WALTER J., University of Florida, Gainesville, Fla. (1920)
MATSUDA, TAKEO, 1321 Elmwood Ave., Evanston, Ill. (1927)
†MATSUMOTO, JUJI, No. 4, 2-Chome, Minami-Sakuma-Cho, Shiba, Tokyo, Japan.
†MATSUNAMI, MASAAKI, Kyoto First Commercial School, Matsubaradori-Omiya-Nishi, Kyoto, Japan.
MATTESON, JAMES S., 700 Alworth Bldg., Duluth, Minn. (1919)
MATTHEWS, JAMES M., 465 Worcester St., (82), Wellesley Hills, Mass. (1920)
MATZ, HERMAN L., University Club, Chicago, Ill. (1923)
†(J.) MAX AND COMPANY, Neue Schweidnitzerstrasse 5, Breslau 5, Germany.
MAX, WILLIAM D., 208 Sterling St., Brooklyn, N. Y. (1921)
MAXWELL, JAMES A., Clark University, Worcester, Mass. (1925)
MAXWELL, LLOYD W., 99 Claremont Ave., New York City. (1919)
MAXWELL, W. RUSSELL, Dalhousie University, Halifax, N. S., Canada. (1923)
MAY, CARROLL H., 1710 Brooklyn Ave., Ann Arbor, Mich. (1923)
MAY, GEORGE O., 56 Pine St., New York City. (1908)
MAY, RICHARD A., General Motors Japan, Ltd., Tsurumachi 1 Chome, Minatoku, Osaka, Japan. (1927)
MAY, STACY, Dartmouth College, Hanover, N. H. (1920)
MAYER, JOSEPH, Tufts College, Mass. (1921)
MAYNARD, H. H., College of Commerce, Ohio State University, Columbus, Ohio. (1921)
MEANS, GARDINER C., 108 Raymond Ave., Poughkeepsie, N. Y. (1926)
MEARS, ELIOT G., Stanford University, Cal. (1917)
†MECHANICS MERCANTILE LIBRARY, 31 Post St., San Francisco, Cal.
MEECH, STUART P., Box 88, Faculty Exchange, University of Chicago, Chicago, Ill. (1922)
MEEKER, J. EDWARD, 18 Broad St., New York City. (1927)
MEEKER, ROYAL, 625 Whitney Ave., New Haven, Conn. (1903)
MEHL, PAUL, 528 N. Lockwood Ave., Chicago, Ill. (1919)

MELNIKOW, HENRY P., Room 202, 525 Market St., San Francisco, Cal. (1928)
MELOY, THOMAS K., Rivermere Court, Bronxville, N. Y. (1924)
MENDUM, S. W., U. S. Department of Agriculture, Bureau of Agricultural Economics, Washington, D. C. (1923)
†MERCANTILE LIBRARY, Broadway and Locust St., St. Louis, Mo.
MERCHANT, ELY O., 2716 Graybar Bldg., New York City. (1910)
†MEREDITH COLLEGE LIBRARY, Raleigh, N. C.
MERIAM, RICHARD S., Amherst College, Amherst, Mass. (1914)
MERRIAM, JAMES R., 6 Orchard St., White Plains, N. Y. (1914)
MERRY, GLENN N., 39 Beacon St., Portland, Me. (1925)
MERTZKE, A. G., 126 Main St., Evanston, Ill. (1921)
METCALF, HENRY C., 61 Payne Ave., New Rochelle, N. Y. (1900)
†METROPOLITAN LIBRARY, Pei Hai, Peking, China.
†METROPOLITAN LIFE INSURANCE COMPANY LIBRARY, 1 Madison Ave., New York City.
MEYER, BALTHASAR H., Interstate Commerce Commission, Washington, D. C. (1889)
MEYER, CARL, 208 S. La Salle St., Chicago, Ill. (1918)
*MEYER, EUGENE, JR., War Finance Corporation, Washington, D. C. (1910)
MEYER, JOHN W., 223 S. 51st St., Philadelphia, Pa. (1925)
MEZ, JOHN, University of Arizona, Tucson, Ariz. (1928)
†MEZHDUNARODNAYA KNIGA, Prospect Volodarsky, 53 a, Leningrad, Russia.
†MIAMI UNIVERSITY LIBRARY, Oxford, Ohio.
†MICHIGAN COLLEGE OF MINING AND TECHNOLOGY, LIBRARY, Houghton, Mich.
†MICHIGAN STATE COLLEGE LIBRARY, East Lansing, Mich.
†MICHIGAN STATE LIBRARY, Lansing, Mich.
†MICHIGAN, UNIVERSITY OF, LIBRARY, Ann Arbor, Mich.
†MICHIGAN, UNIVERSITY OF, GENERAL LIBRARY, Ann Arbor, Mich.
MIDDAUGH, FLORENCE K., 1916 17th St., N. W., Washington, D. C. (1918)
†MIDDLEBURY COLLEGE LIBRARY, Middlebury, Vt.
MIDDLETON, KEITH J., 933 16th Ave., N., Seattle, Wash. (1923)
MIGHELL, ALBERT, 702 Ash Ave., Ames, Iowa. (1925)
MIKKELSEN, MICHAEL A., R. F. D., Route 2, Danbury, Conn. (1910)
#MILLER, ADOLPH C., 2320 S. St., N. W., Washington, D. C. (1901)
MILLER, CHARLES B., JR., 127 Bonnie Brae, Warren, Ohio. (1926)
MILLER, DONALD C., 627 N. Broad St., Lancaster, Ohio. (1921)
MILLER, EDITH M., National Bank of Commerce, 31 Nassau St., New York City. (1916)
MILLER, EDMUND T., University Station, Austin, Texas. (1909)
MILLER, GEORGE P., 1504-425 E. Water St., Milwaukee, Wis. (1907)
MILLER, HARRY E., 8 Oakland Rd., Sharon, Mass. (1923)
MILLER, LEE, 15 Oxford St., Cambridge, Mass. (1927)
MILLER, PAUL L., Iowa State College, Agricultural Hall, Room 312, Ames, Iowa. (1924)
MILLER, RAYMOND B., 12 Chatham St., Cambridge, Mass. (1923)
MILLER, ROLAND M., Sacramento Junior College, Sacramento, Cal. (1923)
MILLER, SIDNEY L., College of Commerce, University of Iowa, Iowa City, Iowa. (1920)
MILLER, WILLIAM B., Box 161, Greenwich, Conn. (1913)
MILLIS, HARRY A., Faculty Exchange, University of Chicago, Chicago, Ill. (1895)
MILLS, FREDERICK C., Columbia University, New York City. (1920)
MILLS, HERBERT E., Poughkeepsie, N. Y. (1890)
MILLS, MARK C., Department of Economics, Indiana University, Bloomington, Ind. (1923)
*MILLS, OGDEN L., 3 S. William St., New York City. (1916)
†MILWAUKEE PUBLIC LIBRARY, 8th and Grand Ave., Milwaukee, Wis.
MINER, EDWARD G., The Pfandler Company, Rochester, N. Y. (1914)

†MINNEAPOLIS PUBLIC LIBRARY, 10th and Hennepin Ave., Minneapolis, Minn.
†MINNESOTA HISTORICAL SOCIETY, St. Paul, Minn.
†MINNESOTA STATE LIBRARY, St. Paul, Minn.
†MINNESOTA TAX COMMISSION, State Capitol, St. Paul, Minn.
†MINNESOTA, UNIVERSITY OF, LIBRARY, Minneapolis, Minn.
†MINNESOTA, UNIVERSITY OF, Department of Agriculture, University Farm, St. Paul, Minn.
MINTS, LLOYD W., Box 237, Faculty Exchange, University of Chicago, Chicago, Ill. (1922)
MISES, LUDWIG, Wollzeile 24, I., Vienna, Austria. (1924)
†MISSISSIPPI A. AND M. COLLEGE, GENERAL LIBRARY, A. and M. College, Miss.
†MISSISSIPPI STATE COLLEGE FOR WOMEN, LIBRARY, Columbus, Miss.
†MISSISSIPPI WOMAN'S COLLEGE LIBRARY, Hattiesburg, Miss.
†MISSOURI, UNIVERSITY OF, LIBRARY, Columbia, Mo.
MITCH, GEORGE F., 124 Miles St., State College, Pa. (1926)
MITCHELL, BROADUS, Johns Hopkins University, Baltimore, Md. (1921)
MITCHELL, JAMES MCC., 70 Oakland Pl., Buffalo, N. Y. (1914)
MITCHELL, JOHN P., JR., School of Business Administration, University of Michigan, Ann Arbor, Mich. (1924)
MITCHELL, WALDO F., De Pauw University, Greencastle, Ind. (1920)
MITCHELL, WALTER S., 5028 Morewood Pl., East End, Pittsburgh, Pa. (1912)
*MITCHELL, WESLEY C., 161 W. 12th St., New York City. (1903)
†MITSUBISHI-GOSHI-KAISHA, Economic Research Department, Marunouchi, Tokyo, Japan
†MITSUI BANK, "CHOSAKA," 5 Honkawaya-Cho, Nihonbashi, Tokyo, Japan.
MITTELMAN, EDWARD B., Oregon State College, Corvallis, Ore. (1920)
MIXTER, CHARLES W., 1830 R. St., Washington, D. C. (1890)
MODLIN, GEORGE M., Graduate College, Princeton, N. J. (1926)
MOFFAT, JAMES E., 518 S. Park Ave., Bloomington, Ind. (1915)
MOLODOVSKY, NICHOLAS, 14 rue Littre, Paris, France. (1926)
†MONOPOLY BUREAU, Department of Finance, Tokyo, Japan.
MONOSSON, LEON, Room 1707, 165 Broadway, New York City. (1927)
#MONROE, ARTHUR E., 53 Apley Court, Cambridge, Mass. (1915)
MONROE, DAY, 5620 Kenwood Ave., Chicago, Ill. (1926)
MONROE, WILLIAM S., 64 E. Elm St., Chicago, Ill. (1917)
†MONTAGUE BRANCH LIBRARY, 197 Montague St., Brooklyn, N. Y.
MONTAGUE, GILBERT H., 40 Wall St., New York City. (1926)
†MONTAGUE LIBRARY, Box 270, Mars Hill, N. C.
†MONTANA AGRICULTURAL EXPERIMENT STATION, Agricultural Economics Department, Bozeman, Mont.
MONTGOMERY, R. H., 101 E. 31st St., Austin, Texas. (1922)
#MONTGOMERY, ROBERT H., 110 William St., New York City. (1915)
MOORE, ARTHUR, Division of Agricultural Finance, Bureau of Agricultural Economics, Washington, D. C. (1925)
MOORE, F. W., 2537 Eastwood Ave., Evanston, Ill. (1927)
MOORE, HENRY L., Columbia University, New York City. (1896)
#MOORE, JUSTIN H., Irving Bank-Columbia Trust Company, Woolworth Bldg., New York City. (1920)
MOORE, S. H., Southern Methodist University, Dallas, Texas. (1923)
†MOORHEAD PUBLIC LIBRARY, Moorhead, Minn.
MOORHOUSE, HAROLD W., 135 W. 183rd St., New York City. (1912)
MOORHOUSE, LLEWELLYN A., State Agricultural College, Fort Collins, Colo. (1922)
MOOT, ADELBERT, 302 Erie County Savings Bank Bldg., Buffalo, N. Y. (1911)
MORAWETZ, VICTOR, 15 Broad St., New York City. (1915)

Morehouse, E. W., 555 Provident Ave., Winnetka, Ill. (1925)
Morehouse, Samuel C., 42 Church St., New Haven. Conn. (1909)
Morgan, Charles S., 5721 Chevy Chase Parkway, Washington, D. C. (1917)
Morgan, Gerald, Hyde Park, N. Y. (1920)
*Morgan, John P., 23 Wall St., New York City. (1913)
Morgenthau, M. L., 431 Hudson St., New York City. (1910)
Moriarty, William D., University of Southern California, Los Angeles, Cal. (1920)
Morrill, Chester, War Finance Corporation, Washington, D. C. (1924)
Morris, Edward B., Travelers Insurance Company, Hartford, Conn. (1915)
Morris, Victor P., 650 12th Ave., E., Eugene, Ore. (1926)
Morrison, Loyle A., New York University, 236 Wooster St., New York City. (1923)
Morrison, Paul L., 2131½ Ridge Ave., Evanston, Ill. (1928)
Morrison, Vernon G., 2136 S. 15th St., Lincoln, Neb. (1926)
Morrow, Curtis H., 3 W. Court, Waterville, Me (1922)
*Morrow, Dwight W., J. P. Morgan and Company, 23 Wall St., New York City. (1921)
*Morse, Lewis K., 201 Devonshire St., Boston, Mass. (1916)
†Morse, C. K., Curtis, Neb.
*Morss, John W., Room 909, 201 Devonshire St., Boston, 9, Mass. (1909)
Morton, Walter A., University of Wisconsin, Madison, Wis. (1928)
Moses, David K., 25 Kress Park, New Rochelle, N. Y. (1919)
Mosher, John I., West Virginia University, Department of Economics, Morgantown, W. Va. (1926)
Mott, Howard S., 170 Broadway, New York City. (1910)
Moulton, Harold G., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1911)
†Mount Holyoke, College Library, South Hadley, Mass.
†Mount Union College Library, Alliance, Ohio.
†Mount Vernon Public Library, Mount Vernon, N. Y.
Mowbray, A. H., 1012 Colusa Ave., Berkeley, Cal. (1924)
#Moyer, Melbourne S., 260 Cumberland St., Brooklyn, N. Y. (1911)
Mudgett, Bruce D., University of Minnesota, Minneapolis, Minn. (1918)
Muhse, A. C., The Toronto, 20th and P. Sts., N. W., Washington, D. C. (1903)
†Mukai, Shikamatsu, No. 412, Den-En-Chofu, Ebara-Gun, Tokyo-fu, Japan.
†Muncie Public Library, Muncie, Ind.
Munn, John P., 18 W. 58th St., New York City. (1911)
Muntz, Earl E., Department of Economics, School of Commerce, New York University, Washington Sq., New York City. (1923)
#Murdock, Arthur E., Box 519, San Antonio, Texas. (1911)
Murdock, Louise H., Holden, Mass. (1910)
Murnane, George, 43 Exchange Pl., New York City. (1920)
Murphy, Henry, 2435 Bancroft Way, Berkeley, Cal. (1926)
Murray, John J., 525 Boylston St., Boston, Mass. (1925)
Murray, William G., Iowa State College, Department of Agricultural Economics, Ames, Iowa. (1927)
†Murray Library, Lake Erie College, Painesville, Ohio.
†Murray State Normal School Library, Murray, Ky.
†Muskingum College Library, New Concord, Ohio.
Mussey, Henry R., Wellesley College, Wellesley, Mass. (1922)
Myers, E. A., Box 933, Toledo, Ohio. (1915)
Myers, Earl D., 6007 Kimbark Ave., Chicago, Ill. (1926)
Myers, Howard B., University of Florida, Gainesville, Fla. (1927)
Myers, William I., College of Agriculture, Ithaca, N. Y. (1919)

Myers, Walter R., 103 School of Business, University of Minnesota, Minneapolis, Minn. (1922)
†Mysore University Library, Mysore, India.
Nadler, Marcus, New York University, 90 Trinity Pl., New York City. (1924)
Naether, Carl A., University of Southern California, Los Angeles, Cal. (1923)
†Nagasaki Higher Commercial School, Nagasaki, Japan.
Nagel, Charles, Security Bldg., St. Louis, Mo. (1901)
†Nagoya Commercial College, Nagoya, Japan.
†Naito, Akira, No. 1665, Higashi-Nakano, near Tokyo, Japan.
Nakagawa, S., Furukawa Mining Company, Tokyo, Japan. (1907)
†Nakajima, Yadanji, No. 1160, Zoshigaya, near Tokyo, Japan.
†Nankai University Library, Tientsin, China.
†(Nathaniel A.) Narbonne High School, Lomita, Cal.
Nash, Eric F., Blake Hall, University of Chicago, Chicago, Ill. (1928)
Nash, Luther R., Stone and Webster, Inc., 49 Federal St., Boston, Mass. (1916)
†Natal Technical College, Durban, Natal, South Africa.
†National Association of Real Estate Boards, 310 S. Michigan Ave., Chicago, Ill.
†National Bank of Commerce Library, 31 Nassau St., New York City.
†National Institute of Public Administration, 261 Broadway, New York City.
†National Life Insurance Company, Library, Montpelier, Vt.
Navin, Stephen J., University of Illinois, Urbana, Ill. (1927)
†Nebraska State Library, Lincoln, Neb.
†Nebraska, University of, Library, Lincoln, Neb.
†Nederlandsche Handel-Maatschappij, Post box 669, Amsterdam, C, Netherlands.
Neifeld, Morris R., 833 Brooklyn Ave., Brooklyn, N. Y. (1924)
Neill, Charles P., Room 616, Woodward Bldg., Washington, D. C. (1896)
Neill, James L., 10 Neeld Crescent, Wembley, Middlesex, England. (1927)
Neiswanger, William A., University of Wisconsin, Madison, Wis. (1924)
Nelson, Elmer S., 5723 Victoria Ave., Los Angeles, Cal. (1924)
Nelson, Oscar S., Wharton School, University of Pennsylvania, Philadelphia, Pa. (1927)
Nelson, Richard W., 204 University Hall, Iowa City, Iowa. (1922)
Nerlove, S. H., University of Chicago, School of Commerce, Chicago, Ill. (1923)
Ness, Norman T., University of Nevada, Reno, Nev. (1927)
†Nevada State Library, Carson City, Nev.
†New Bedford Free Public Library, New Bedford, Mass.
†New Hampshire State Library, Concord, N. H.
†New Hampshire, University of, Library, Durham, N. H.
†New Hill Memorial Library, Louisiana State University, Baton Rouge, La.
†New Jersey State Library, Trenton, N. J.
†New Mexico, University of, Library, Albuquerque, N. Mex.
†New Orleans Public Library, New Orleans, La.
†New River State School, Montgomery, W. Va.
†New School for Social Research, Library, 465 W. 23rd St., New York City.
†New South Wales Public Library, The Principal Librarian, Sydney, Australia.
†New York Public Library, 476 5th Ave., New York City.
†New York State College of Agriculture, Farm Management, Cornell University, Ithaca, N. Y.
†New York State Library, State Education Bldg., Albany, N. Y.
†New York University Library, University Heights, New York City.
†New York University, School of Commerce, 32 Waverly Pl., New York City.
†New York University Library, Washington Sq., New York City.

†New York, College of the City of, Library, Convent Ave. and 139th St., New York City.
†Newark Free Public Library, 5 Washington St., Newark, N. J.
†Newberry Library, Walton Pl., Chicago, Ill.
Newcomb, H. T., 32 Nassau St., New York City. (1889)
Newcomb, Josiah T., 304 National Savings and Trust Bldg., Washington, D. C. (1923)
Newcomer, Mable, Vassar College, Poughkeepsie, N. Y. (1915)
Newlove, George H., Gilman Hall, Johns Hopkins University, Baltimore, Md. (1914)
Nieman, L. W., Editor, Milwaukee Journal, Milwaukee, Wis. (1924)
†Niitakado Book Store, 20 Sakae-Cho-Itchome, Taihoku, Taiwan, Japan.
†Nijhoff, Martinus, Lange Voorhout 9, S'Gravenhage, Netherlands.
Niles, Mrs. M. C. H., 780 Prospect Ave., Hartford, Conn. (1924)
Nilsson, Arthur E., 501 Lighthouse Rd., New Haven, Conn. (1927)
Noble, Clarence V., Department of Agricultural Economics, University of Florida, Gainesville, Fla. (1919)
Noble, Howard S., 916 Hyperion Ave., Los Angeles, Cal. (1921)
†Nomura-Gomei-Kaisha, 2-chome, Bingomachi, Higashiku, Osaka, Japan.
†Nomura-Shoken-Kabushiki-Kaisha, "Chosabu," 2-chome, Azuchimachi, Higashiku, Osaka, Japan.
Nordlie, Leonard T., James Millikin University, Decatur, Ill. (1923)
Norsworthy, S. C., 64 Walmer Rd., Toronto, Ont., Canada. (1928)
†North Carolina College for Women, Library, Greensboro, N. C.
†North Carolina State College of Agriculture and Engineering Library, State College Station, Raleigh, N. C.
†North Carolina State College, Attention: E. E. Stretcher, Department of Business Administration, State College Station, Raleigh, N. C.
†North Carolina, University of, Library, Chapel Hill, N. C.
†North Central College Library, Naperville, Ill.
†North Dakota Agricultural College Library, Agricultural College, N. D.
†North Dakota, State University of, Library, University Station, Grand Forks, N. D.
†North Texas State Teachers College, Denton, Texas.
Northcott, Clarence H., Cocoa Works, York, England. (1925)
†Northeastern University Library, 316 Huntington Ave., Boston, Mass.
†Northern State Normal School, Marquette, Mich.
†Northwestern State Teachers College, Alva, Okla.
†Northwestern University Library, Evanston, Ill.
†Northwestern University, School of Commerce Library, 337 E. Chicago Ave., Chicago, Ill.
Norton, Homer W., 732 Monadnock Bldg., San Francisco, Cal. (1923)
Norton, Laurence J., University of Illinois, Urbana, Ill. (1924)
Norton, Thomas L., 736 W. 181st St., Apt. 69, New York City. (1925)
Notz, William F., 5422 39th St., N. W., Washington, D. C. (1915)
Nourse, Edwin G., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1911)
Noyes, Alexander D., 260 W. 76th St., New York City. (1899)
Noyes, George W., Oneida, N. Y. (1911)
†Nozaki, K., Geinze Silk Manufacturing Company, Ayabe-Machi, Kyoto-fu, Japan.
Nuffort, Walter, 900 S. 16th St., Newark, N. J. (1921)
Nuki, Denmatsu, Senshu University, Kanda, Tokyo, Japan. (1927)
Nunn, William L., University of Pittsburgh, Department of Economics, Pittsburgh, Pa. (1927)
Nystrom, Paul H., 521 W. 112th St., New York City. (1924)

OAK, VISHNU V., Wilberforce, Ohio. (1928)
†OAKLAND FREE LIBRARY, Oakland, Cal.
OBANA, TSUTOMU, 2515 Hillegass Ave., Berkeley, Cal. (1924)
†OBERLIN COLLEGE LIBRARY, Oberlin, Ohio.
#O'BRIEN, JOHN J., 3246 Washington Blvd., Chicago, Ill. (1917)
OCHS, ADOLPH S., New York Times, Times Sq., New York City. (1911)
O'CONNELL, P. A., 155 Tremont St., Boston, Mass. (1912)
ODATE, GYOJU, 1 Tsuna-machi, Mita, Shiba-ku, Tokyo, Japan. (1919)
ODEGARD, SIGURD L., 410 E. 5th St., Long Beach, Cal. (1922)
OGAWA, SHIGETOMI, Care of Yonosuke Ogawa, Urawa-machi, Saitama-ken, Japan. (1926)
OGBURN, WILLIAM F., University of Chicago, Chicago, Ill. (1911)
OGG, FREDERIC A., 1715 Kendall Ave., Madison, Wis. (1910)
OGILVIE, FREDERICK W., 20 Murrayfield Gardens, Edinburgh, Scotland. (1926)
†OGLETHORPE UNIVERSITY LIBRARY, Oglethorpe University, Ga.
O'GORMAN, JAMES A., 165 Broadway, New York City. (1918)
O'GRADY, JOHN, 305 Vermont Bldg., Washington, D. C. (1916)
†OHARA INSTITUTE OF SOCIAL RESEARCH, Reijincho Tennoji, Minamiku, Osaka, Japan.
O'HARA, FRANK, Catholic University of America, Brookland, D. C. (1910)
†OHIO NORTHERN UNIVERSITY LIBRARY, Ada, Ohio.
†OHIO STATE LIBRARY, State House, Columbus, Ohio.
†OHIO STATE UNIVERSITY LIBRARY, Columbus, Ohio.
†OHIO UNIVERSITY CARNEGIE LIBRAR Athens, Ohio.
†OHIO WESLEYAN UNIVERSITY LIBRARY, Delaware, Ohio.
OHSOL, JOHANN G., 540 Ft. Washington Ave., Apt. 51, New York City. (1913)
†OITA KOTO-SHOGYO-GAKKO, Oita, Japan.
†OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE, Stillwater, Okla.
†OKLAHOMA, UNIVERSITY OF, LIBRARY, Norman, Okla.
OKUMURA, R., 327 6th St., Oakland, Cal. (1925)
†OKUNO, T., Nippon Yusen Kaisha, Colman Bldg., 1st Ave., Seattle, Wash.
†OKURA COMMERCIAL COLLEGE, No. 3, Aoi-Cho, Akasaka, Tokyo, Japan.
†OLIVET COLLEGE LIBRARY, Olivet, Mich.
OLSEN, HERLUF, University of Delaware, Newark, Del. (1924)
OLSON, EMERY E., University of Southern California, Los Angeles, Cal. (1922)
OLSON, LYLE H., American Appraisal Company, 120 Broadway, Room 1615, New York City. (1920)
†OMAHA PUBLIC LIBRARY, Corner 19th and Harney Sts., Omaha, Neb.
OMELTCHENKO, EUGENE I., 15 Moore St., New York City. (1926)
O'NEILL, GROVER, 22 William St., New York City. (1926)
ONO, YEIJIRO, Kobinada Dai machi, 1 chome, Koishi Kawa-Ku, Tokyo, Japan. (1915)
†ONTARIO AGRICULTURAL COLLEGE, Guelph, Ontario, Canada.
†ONTARIO LEGISLATIVE LIBRARY, Toronto, Ontario, Canada.
†OOSTEN, H. J., 153 Rokin, Amsterdam, Holland.
OPIE, REDVERS, 14 Mass Hall, Cambridge, Mass. (1926)
†OREGON AGRICULTURAL COLLEGE LIBRARY, Corvallis, Ore.
†OREGON, UNIVERSITY OF, LIBRARY, Eugene, Ore.
†ORSZAGOS KONYVFORGALMI ES BIBLIOGRAFIAI KOZPMT, (HUNGARIAN LIBRARIES BOARD), Nemzeti Muzem, Budapest, Hungary.
ORTEN, M. D., University of Missouri, School of Mines, and Metallurgy, Rolla, Mo. (1924)
ORTON, WILLIAM A., 64 Kensington Ave., Northampton, Mass. (1922)
†OSAKA ASAHI SHIMBUNSHA LIBRARY, Osaka, Japan.
†OSAKASHI-DENKIKYOKU-KANSAKA, Kujo, Minatoku, Osaka, Japan.

†Osakayago, M. H., Sukiya-Cho, Nihonbashi, Tokyo, Japan.
Osborn, Grover P., Care of Rev. E. McDill, 850 Oak St., Walnut Hills, Cincinnati, Ohio. (1921)
Osborn, William C., 50 Broadway, New York City. (1910)
Osborne, Algernon A., U. S. Department of Commerce, Washington, D. C. (1924)
Osborne, Robert S., 436 Huntington Rd., Kansas City, Mo. (1914)
Osgood, Roy C., First Trust and Savings Bank, First National Bank Bldg., Chicago, Ill. (1916)
†Oshima, K., 5 chome, Kitahama (Head Office), Sumitomo Bank, Ltd., Osaka, Japan.
†Ossinsky, V. V., Kremlin Detskaia Polovina, Moscow, Russia.
Ostlund, Harry J., School of Business, University of Minnesota, Minneapolis, Minn. (1920)
Ostrolenk, Bernhard, Farm School, Pa. (1922)
†Otaru-Koto-Shogyo-Gakko, (Otaru Higher Commercial School), Otaru, Hokkaido, Japan.
Ottman, Frederick R., 44 Lenox Ave., Ridgewood, N. J. (1926)
Owens, Richard N., Emory University, Ga. (1923)
†Pacific Lutheran College, Parkland, Wash.
#Page, Atwood C., 314 Collins St., Hartford, Conn. (1912)
Page, Frederick P., 35 Henley Rd., Ipswich, England. (1911)
Page, Howard W., 700 West End Trust Bldg., 32 S. Broad St., Philadelphia, Pa. (1912)
Page, Kirby, 3947 Gosman Ave., Long Island City, N. Y. (1924)
Page, Thomas W., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1900)
Palmer, Arthur W., Bureau of Agricultural Economics, Washington, D. C. (1924)
Palmer, Edgar Z., College of Commerce, University of Kentucky, Lexington, Ky. (1927)
Palmer, Gladys L., Hollins College, Hollins, Va. (1920)
Palmer, James L., University of Chicago, Chicago, Ill. (1927)
†Palo Alto Public Library, Palo Alto, Cal.
Palyi, Melchior, Handelshochschule, Spandauer Str. 1, Berlin C2, Germany. (1927)
Pancoast, Elinor, Goucher College, Box 267, Baltimore, Md. (1923)
Pangle, Maxwell G., Morris Harvey College, Barboursville, W. Va. (1924)
†Panhandle Agricultural and Mechinal College, Goodwell, Okla.
†Panjab University Library, Senate House, Lahore, India.
‡Pantaleoni, Maffeo, 4, Via Guilia, Rome, Italy. (1922)
Panunzio, Constantine M., Whittier College, Whittier, Cal. (1926)
Park, James, 141 Broadway, New York City. (1911)
†Parliamentary Library, The Librarian, Macquarrie St., Sydney, N. S. W., Australia.
Parmelee, Julius H., Bureau of Railway Economics, Washington, D. C. (1917)
Parry, Carl E., Division of Research and Statistics, Federal Reserve Board, Washington, D. C. (1910)
Parsons, Talcott, 6 Holyoke House, Cambridge, Mass. (1927)
†Pasadena High School and Junior College, E. Colorado St., Pasadena, Cal.
†Pasadena Public Library, Pasadena, Cal.
Pasel, Lawrence, 501 W. 113th St., New York City. (1924)
Paton, W. A., 16 Ridge Way, Ann Arbor, Mich. (1917)
Patrick, James G., Spokane University, Spokane, Wash. (1925)
Patten, Frank C., Rosenberg Library, Galveston, Texas. (1904)
Patterson, Ernest M., University of Pennsylvania, Philadelphia, Pa. (1912)
Patterson, S. Howard, Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1921)
Patterson, T. H. Hoge, 4231 Walnut St., Philadelphia, Pa. (1919)

PATTON, AUDLEY E., Room 1318, 72 W. Adams St., Public Service Company of Northern Illinois, Chicago, Ill. (1924)
PATTON, EUGENE B., Department of Labor, 124 E. 28th St., New York City. (1908)
PATTON, FRANCIS L., Hamilton College, Clinton, N. Y. (1920)
PATTON, HAROLD S., University of Cincinnati, Cincinnati, Ohio. (1923)
PATTON, R. D., 450 W. 8th Ave., Columbus, Ohio. (1927)
PAULSON, W. E., Farm Management Department, Purdue University, Lafayette, Ind. (1925)
PAVLOFF, JOSEPH M., Room 1707, 165 Broadway, New York City. (1927)
PAYNE, W. E., Department of Economics and Commerce, Battle Creek College, Battle Creek, Mich. (1922)
†(GEORGE) PEABODY COLLEGE FOR TEACHERS, Nashville, Tenn.
†PEABODY INSTITUTE, Baltimore, Md.
*PEABODY, GEORGE F., 25 Broad St., New York City. (1902)
PEABODY, W. R., 514 W. 114th St., New York City. (1924)
PEARSON, FRANK A., Cornell University, Ithaca, N. Y. (1924)
PEAT, JAMES B., Federal Trade Commission, Washington, D. C. (1909)
*PEAVY, LEROY D., Wellesley Hills, Mass. (1911)
PECK, HARVEY W., 722 Maryland Ave., Syracuse, N. Y. (1922)
PECK, MILLARD, Bureau of Agricultural Economics, Department of Agriculture, Washington, D. C. (1926)
PEEBLES, ALLON, Columbia University, Hamilton Hall, New York City. (1923)
PEIRCE, PAUL S., 139 Morgan St., Oberlin, Ohio. (1910)
PEISCH, ARCHIE M., Hanover, N. H. (1919)
PEIXOTTO, JESSICA B., Cloyne Court, Berkeley, Cal. (1909)
PELLETIER, VICTOR M., 849 Beacon St., Boston, Mass. (1909)
PELZ, VICTOR H., H. O. Wilbur and Sons, 235 N. 3rd St., Philadelphia, Pa. (1920)
PENDERGAST, ROLAND B., Wellesley Farms, Mass. (1926)
PENHALE, RANDALL R., American University, Washington, D. C. (1928)
†PENN COLLEGE LIBRARY, Oskaloosa, Iowa.
†PENNSYLVANIA SCHOOL OF SOCIAL AND HEALTH WORK, LIBRARY, 311 S. Juniper St., Philadelphia, Pa.
†PENNSYLVANIA STATE COLLEGE LIBRARY, State College, Pa.
†PENNSYLVANIA STATE LIBRARY, Harrisburg, Pa.
†PEORIA PUBLIC LIBRARY, Peoria, Ill.
PERCEFULL, SABIN C., Northwestern State Teachers College, Alva, Okla. (1921)
PERKINS, ALBERT T., St. Louis Union Trust Company, St. Louis, Mo. (1917)
PERLMAN, SELIG, 1805 Rowley Ave., Madison, Wis. (1915)
PERRIGO, H. W., 215 S. Kendrick Ave., Glendive, Mont. (1927)
PERRIN, JOHN, 1000 Buena Vista St., South Pasadena, Cal. (1916)
PERSON, HARLOW S., Taylor Society, 29 W. 39th St., New York City. (1901)
PERSONS, CHARLES E., 93 Brook St., Wellesley, Mass. (1910)
PERSONS, WARREN M., 27 Everett St., Cambridge, Mass. (1905)
PETERS, MRS. IVA L., 108 Waverly Ave., Syracuse, N. Y. (1922)
PETERSEN, ELMORE, University of Colorado, Extension Division, Boulder, Colo. (1914)
PETERSON, AGNES L., Women's Bureau, U. S. Department of Labor, Washington, D. C. (1923)
PETERSON, FLORENCE B., 687 Lincoln Ave., Winnetka, Ill. (1928)
PETERSON, GEORGE M., 907 Union Trust Bldg., Washington, D. C. (1928)
PETERSON, G. S., 702 W. Huron St., Ann Arbor, Mich. (1924)
PETERSON, MRS. MARY S., 304 Princeton Ave., Madison, Wis. (1920)

PETERSON, RUDOLPH, 3024 6th Ave., Beaver Falls, Pa. (1925)
#PFORZHEIMER, ARTHUR, 120 Broadway, New York City. (1921)
PHELAN, JAMES D., 603 Phelan Bldg., San Francisco, Cal. (1911)
PHELPS, Clyde W., University of Chattanooga, Chattanooga, Tenn. (1927)
PHELPS, ESMOND, 410 Camp St., New Orleans, La. (1911)
†PHILADELPHIA FREE LIBRARY, Logan Sq., Philadelphia, Pa.
†PHILADELPHIA FREE LIBRARY, Kingsesseng Branch, 51st St. below Chester Ave., Philadelphia, Pa.
†PHILADELPHIA, LIBRARY COMPANY OF, Juniper and Locust Sts., Philadelphia, Pa.
†PHILIPPINE LIBRARY AND MUSEUM, Manila, P. I.
†PHILIPPINES, UNIVERSITY OF THE, COLLEGE OF LIBERAL ARTS LIBRARY, Manila, P. I.
PHILLIPS, CHESTER A., 220 Ronald St., Iowa City, Iowa. (1915)
PHILLIPS, M. O., JR., University of Florida, Gainesville, Fla. (1927)
PHILLIPS, OSMUND, 2316 Avenue J., Brooklyn, N. Y. (1917)
PHILLIPS, P. D., Selborne Chambers, Chancery Lane, Melbourne, Victoria, Australia. (1926)
*PHIPPS, LAWRENCE C., 617 Symes Bldg., Denver, Colo. (1901)
PIAN, CHARLES H., Seymour Rd., British Concession, Tientsin, China. (1917)
PICKETT, RALPH, Mercer, Mo. (1925)
‡PIGOU, ARTHUR C., King's College, Cambridge, England. (1908)
#PIKE, EUGENE R., 2430 Lake View Ave., Chicago, Ill. (1916)
PINCHBECK, RAYMOND B., 64 High St., Salem, Va. (1923)
PINKHAM, ARTHUR W., 311 Western Ave., Lynn, Mass. (1915)
PIPER, CLARENCE B., 49 Cedar Rd., Belmont, Mass. (1921)
PIQUET, HOWARD S., 51 Graduate College, Princeton, N. J. (1927)
†PITTSBURGH, UNIVERSITY OF, LIBRARY, 310 State Hall, Pittsburgh, Pa.
†PITTSBURGH, UNIVERSITY OF, Downtown Division Library, 1024 Chamber of Commerce Bldg., Pittsburgh, Pa.
PLEHN, CARL C., 2308 Warring St., Berkeley, Cal. (1891)
PLEYDELL, A. C., 154 Nassau St., New York City. (1910)
PLIMPTON, GEORGE A., 70 5th Ave., New York City. (1887)
PLOWMAN, E. GROSVENOR, 101 Garden St., Cambridge, Mass. (1922)
PLUMMER, WILBUR C., 7713 Parkview Rd., Highland Park, Philadelphia, Pa. (1925)
POGUE, JOSEPH E., 42 W. 12th St., New York City. (1924)
POLLAK, MRS. JULIAN A., 927 Redway Ave., Cincinnati, Ohio. (1909)
POLLARD, JOHN G., JR., Soldiers Field, Boston, Mass. (1927)
POLLOCK, WALTER W., 4021 Walnut St., Philadelphia, Pa. (1927)
POLMER, SAMUEL C., Faultless Nightwear Corporation, Faultless Sq., Baltimore, Md. (1925)
POLYZOIDES, ADAMANTIOS, Babylon, L. I., N. Y. (1927)
†POMONA PUBLIC LIBRARY, Pomona, Cal.
POOLEY, WILLIAM V., 2253 Sherman Ave., Evanston, Ill. (1925)
#POPE, JAMES D., Auburn, Ala. (1928)
POPE, JESSE E., 3214 Newark St., N. W., Washington, D. C. (1900)
PORTER, A. J., Niagara Falls, N. Y. (1914)
†PORTLAND, LIBRARY ASSOCIATION OF, Portland, Ore.
POUND, ROSCOE, Harvard Law School, Cambridge, Mass. (1924)
POWELL, FRED W., 3705 McKinley St., Chevy Chase, Washington, D. C. (1911)
POWELL, LEONA M., New York Employing Printers Association, 461 8th Ave., New York City. (1926)
POWELL, O. S., Federal Reserve Bank, Minneapolis, Minn. (1927)
POWELL, WELDON, 94 Phelps Rd., Ridgewood, N. J. (1924)
POWELL, WILLIAM H., 41 Plymouth St., Montclair, N. J. (1912)

Powers, Le Grand, 3331 18th St., N. W., Washington, D. C. (1886)
Powlison, Keith, Johns Hopkins Club, Baltimore, Md. (1927)
†Prague University Library, Prague, Czechoslovakia.
†(Enoch) Pratt Free Library, Baltimore, Md.
†Pratt Institute Free Library, 220 Ryerson St., Brooklyn, N. Y.
†Preiss, Hans, Dorotheenstr. 4, Berlin N. W. 7, Germany.
Prentiss, Mary A., Wheaton College, Norton, Mass. (1925)
Preston, Howard H., 5026 15th Ave., N. E., Seattle, Wash. (1918)
Price, H. Bruce, University of Minnesota, Department of Agriculture, University Farm, St. Paul, Minn. (1918)
Pridmore, James C., 710 Wynne-Claughton Bldg., Atlanta, Ga. (1927)
Prime, John H., School of Commerce, New York University, Washington Sq., New York City. (1925)
Prince, Mrs. Benjamin, 44 W. 77th St., New York City. (1911)
†Princeton University Library, Princeton, N. J.
†Principal, H. H. Maharajah's College, Trivandrum, South India.
†Principal, Intelligence Branch, Custom House, London, E. C., England.
†Principal, Presidency College, Calcutta, India.
Prior, Joseph H., 5 S. Wabash Ave., Chicago, Ill. (1912)
†Provident Mutual Life Insurance Company, 4th and Chestnut Sts., Philadelphia, Pa.
†Provincial Library, Edmonton, Alberta, Canada.
†Provincial Library of British Columbia, Victoria, B. C., Canada.
†Prudential Insurance Company of America, (F. L. Hoffman, Consul. Stat.,) Newark, N. J.
Pruyn, Robert C., 60 State St., Albany, N. Y. (1911)
Pryor, Margaret, Economics Department, University of Wisconsin, Madison, Wis. (1924)
†Public Library, Periodicals Division, Washington, D. C.
†Purdue University Library, Lafayette, Ind.
Putman, Bertha H., Mount Holyoke College, South Hadley, Mass. (1903)
Putman, George E., Comptroller's Office, Swift and Company, Union Stock Yards, Chicago, Ill. (1913)
Putman, James W., Butler College, Indianapolis, Ind. (1905)
Pyle, John F., 3300 Wisconsin Ave., Milwaukee, Wis. (1926)
Pyle, J. G., 4th and Market Sts., St. Paul, Minn. (1911)
Quigley, John J., 450 W. 261st St., New York City. (1927)
Raborn, Mamie, Kemp Kort, Wichita Falls, Texas. (1924)
Racusin, Leon, 947 Winona Ave., Chicago, Ill. (1928)
†Radcliffe College Library, Cambridge, Mass.
Ramsperger, H. G., 400 Allaire Ave., Leonia, N. J. (1922)
Ranck, Samuel H., Grand Rapids Public Library, Grand Rapids, Mich. (1906)
Rand, Waldron H., 101 Milk St., Boston, Mass. (1911)
†Randolph Macon Womans College Library, Lynchburg, Va.
Randolph, Evan, Phila-Girard National Bank, P. O. Box 1906, Philadelphia, Pa. (1924)
Randolph, E. F., 1654 Massachusetts Ave., Cambridge 38, Mass. (1890)
Rankin, Erwin, American Founders Trust Company, 50 Pine St., New York City. (1927)
Rankin, J. O., Department of Rural Economics, College of Agriculture, Lincoln, Neb. (1911)
Ransom, William L., 120 Broadway, New York City. (1924)
Raper, Charles L., 700 Ackerman Ave., Syracuse, N. Y. (1902)
*Rappard, William E., Valavran, near Geneva, Switzerland. (1911)
Raskob, John J., Claymont, Del. (1911)

RASMUSSEN, EDVALD L., 5213 Ingleside Ave., Chicago, Ill. (1926)
RASMUSSEN, E. G., University of Omaha, Omaha, Neb. (1927)
RAUBER, EARLE L., 5517 Maryland Ave., Chicago, Ill. (1925)
RAUSHENBUSH, PAUL A., 223 Clifford Court, Randall and Johnson Sts., Madison, Wis. (1923)
RAWLES, WILLIAM A., University of Indiana, Bloomington, Ind. (1900)
RAY, ROBERT J., School of Commerce, Northwestern University, Evanston, Ill. (1912)
RAYNES, GEORGE W., 209 Miller Ave., Portsmouth, N. H. (1914)
†RECHTHOOGESCHOOL, KON. BATAVIAASCH GENOOTSCHAP, Koningsplein West 12, Batavia, Dutch East Indies.
REDFIELD, NELSON M., 925 Fidelity Bldg., Buffalo, N. Y. (1911)
REDPATH, JOHN M., 75 The Iowa, 13th and O. Sts., Washington, D. C. (1924)
REED, HAROLD L., 107 Cayuga Heights Rd., Ithaca, N. Y. (1912)
REED, LOUIS S., New York University, Washington Sq. College, New York City. (1928)
REED, WILLIAM G., 121 Chestnut St., Philadelphia, Pa. (1921)
†REED COLLEGE LIBRARY, Portland, Ore.
†REGINA COLLEGE LIBRARY, Regina, Sask., Canada.
REIGHARD, JOHN J., School of Business, University of Minnesota, Minneapolis, Minn. (1915)
REILLY, WILLIAM J., University of Texas, Austin, Texas. (1928)
REINBOTH, JOHN F., 3929 N. Seeley Ave., Chicago, Ill. (1923)
REITMAN, BEN L., 429 Melrose St., Chicago, Ill. (1924)
†(C. A.) REITZEL BUCHHANDLUNG, Lovstrade 7, Kopenhagen, Denmark.
REMER, CHARLES F., Department of Economics, Williams College, Williamstown, Mass. (1923)
†RENSSELAER POLYTECHNIC INSTITUTE LIBRARY, Troy, N. Y.
RETHERFORD, JESSE E., Pocatello, Idaho. (1912)
†REYNOLDS LIBRARY, 150 Spring St., Rochester, N. Y.
RHOADS, WILLARD R., 910 S. Michigan Ave., Chicago, Ill. (1925)
†RHODE ISLAND STATE LIBRARY, Providence, R. I.
RHODES, EDWARD E., 300 Broadway, Newark, N. J. (1923)
†RICE INSTITUTE LIBRARY, Houston, Texas.
RICE, LLOYD P., 6 Rope Ferry Rd., Hanover, N. H. (1915)
RICH, CHESTER L., Dakota Wesleyan University, Mitchell, S. D. (1925)
RICH, EDGAR J., 6 Beacon St., Boston, Mass. (1916)
†RICHMOND PUBLIC LIBRARY, 901 W. Franklin St., Richmond, Va.
†RICHMOND, UNIVERSITY OF, LIBRARY, University of Richmond P. O., Va.
RICHTER, FREDERIC E., 81 28th St., Jackson Heights, N. Y. (1914)
RIDDLE, JESSE H., Office of Agent General for Reparation Payments, 33 Luisenstrasse, Berlin, Germany. (1917)
RIDDLE, N. GILBERT, West Virginia University, Morgantown, W. Va. (1925)
RIDDLEBERGER, OLIVE M., Bureau of the Census, Washington, D. C. (1924)
RIEGEL, JOHN W., Dennison Manufacturing Company, Framingham, Mass. (1928)
RIEGEL, ROBERT, Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1918)
†RIGA, UNIVERSITY OF, LIBRARY, Riga, Latvia.
RIGGLEMAN, JOHN R., 810 S. Spring St., Los Angeles, Cal. (1923)
RILEY, ALFRED J., Mutual Benefit Life Insurance Company, Newark, N. J. (1924)
RILEY, DONALD C., Graduate College, Princeton, N. J. (1928)
RIPLEY, WILLIAM Z., Newton Centre, Mass. (1890)
RISSINGER, WILLIAM W., 15 Franklin St., N. E., Washington, D. C. (1923)
‡RIST, CHARLES, 18 rue du Parc le Clagny, Versailles, France. (1922)

Rive, Alfred, Yale University, Department of Economics, New Haven, Conn. (1923)
†Riverside Junior College, Riverside, Cal.
*Robb, Russell, 147 Milk St., Boston, Mass. (1911)
Robb, T. Bruce, University of Nebraska, Lincoln, Neb. (1921)
Robb, Willis O., 85 John St., New York City. (1911)
Robbins, Edwin C., University of Oregon, Eugene, Ore. (1912)
Roberson, Ernest, Liberal, Kans. (1928)
Roberts, Charles C., 184 N. Oxford St., Hartford, Conn. (1917)
Roberts, George E., 5 Woodbine Ave., Larchmont, N. Y. (1901)
Roberts, Hazel V., Elizabeth, Wirt County, W. Va. (1925)
Robertson, James P., 1121–24 White Bldg., Seattle, Wash. (1917)
Robinson, Frederick B., College of the City of New York, 139th and Convent Ave., New York City. (1909)
Robinson, Henry M., P. O. Box 453, Pasadena, Cal. (1921)
*Robinson, Mrs. Jane B., 1303 Wentworth Ave., Pasadena, Cal. (1893)
Robinson, J. S., Carleton College, Northfield, Minn. (1928)
Robinson, Leland R., 50 Pine St., New York City. (1916)
Robinson, Maurice H., University of Illinois, Urbana, Ill. (1899)
Robinson, Sanford, 26 Liberty St., New York City. (1915)
Robotka, Frank, Iowa State College, Ames, Iowa. (1923)
Roby, Ralph W., Columbia University, New York City. (1927)
†Rochester Bureau of Municipal Research, W. Earl Weller, Director, 25 Exchange St., Rochester, N. Y.
†Rochester, University of, Library, Rochester, N. Y.
†Rockford College Library, Rockford, Ill.
Roden, Ernest A., 909-915 Fourth National Bank Bldg., Cincinnati, Ohio. (1917)
Rodkey, Robert G., School of Business Administration, Ann Arbor, Mich. (1919)
Roe, Frederick, 5115 Ellis Ave., Chicago Ill. (1925)
†Rogers Park Branch Library, Chicago, Ill.
Rogers, Charles B., 191 Genesee St., Utica, N. Y. (1893)
Rogers, Hopewell L., 900 N. Michigan Ave., Chicago, Ill. (1926)
Rogers, Herbert O., Coal Division, Bureau of Mines, Washington, D. C. (1928)
Rogers, Selma, Box 599, Greenville, N. C. (1924)
Roman, Frederick W., 940 S. Figuero St., Los Angeles, Cal. (1915)
Romotsky, Myer, 2308 Colby St., Dallas, Texas. (1927)
Roorbach, George B., 16 Kirkland Rd, Cambridge, Mass. (1919)
Root, Robert C., 201 Knoles Way, Stockton, Cal. (1923)
Röpke, Wilhelm, Westendstrasse 22, Jena i. Thuringen, Germany. (1927)
Rorem, C. Rufus, University of Chicago, Chicago, Ill. (1927)
Rorty, M. C., 41 Broad St., New York City. (1920)
Rose, Douglas H., Maryland Life Insurance Company, 10 South St., Baltimore, Md. (1924)
Rosebush, Judson G., P. O. Box 87, Appleton, Wis. (1917)
Rosenkampff, Arthur H., New York University, Washington Square E., New York City. (1926)
*Rosenthal, Lessing, 105 W. Monroe St., Chicago, Ill. (1891)
Rosenwald, Julius, Sears, Roebuck and Company, Chicago, Ill. (1910)
Rosewat[illegible] Victor, 1530 Locust St., Philadelphia, Pa. (1892)
Ross, Edward A., University of Wisconsin, Madison, Wis. (1892)
Ross, Edwin B., 907 Rogers Bldg., Vancouver, B. C., Canada. (1916)
Ross, Harry A., Department of Agricultural Economics and Farm Management, Cornell University, Ithaca, N. Y. (1921)

Ross, James A. Jr., Southwestern University, Memphis, Tenn. (1926)
Rossell, Robert T., 747 Union Arcade, Pittsburgh, Pa. (1921)
Rossetti, V. H., Farmers and Merchants National Bank, Los Angeles, Cal. (1912)
Rossiter, W. S., 4 Court St., Concord, N. H. (1906)
Rossmoore, Emerson E., 551 Fifth Ave., New York City. (1921)
Roswell, David S., 50 W. 96th St., New York City. (1921)
Roth, Lester, A. G. Becker and Company, 137 S. LaSalle St., Chicago, Ill. (1911)
Roth, M., Trust Company of Orange, Metropolitan Bldg., Orange, N. J. (1927)
Rounds, Arthur C., 96 Broadway, New York City. (1918)
Rowe, William H., University of Akron, Akron, Ohio. (1926)
Rowntree, Richardson H., Department of Economics, Ohio State University, Columbus, Ohio. (1926)
†Roy, E. M., Librarian, St. Viator College, Bourbonnais, Ill.
†Royal Oak Public Library, Royal Oak, Mich.
†R. Scuola Superiore di Commercio, Ca Foscari, Venezia, Italy.
Rubinow, I. M., 330 S. Ninth St., Philadelphia, Pa. (1905)
Rude, Mrs. Chester A., 1223 S. Odgen Drive, Los Angeles, Cal. (1921)
†Rudolph, C., 1117 B. of L. E. Bldg., Cleveland, Ohio.
Rufener, Louis A., West Virginia University, Morgantown, W. Va. (1914)
Ruggles, Clyde O., Ohio State University, Columbus, Ohio. (1911)
Ruml, Frances, 32 Shepard St., Cambridge, Mass. (1927)
Russel, Albert W., 11945 Carlton Rd., Cleveland Heights, Ohio. (1921)
#Russell, Charles J., 5003 Penn St., Frankford, Philadelphia, Pa. (1911)
Russell, Daniel, Texas A. and M. College, Sociology Department, College Station, Texas. (1926)
Russell, Fred A., 311 Commerce Bldg., University of Illinois, Urbana, Ill. (1924)
Russell, Roy E., 110 E. 42nd St., New York City. (1925)
Russell, Stanley A., Jr., 160 N. Mountain Ave., Montclair, N. J. (1920)
†Rutgers College Library, George A. Osborn, Librarian, New Brunswick, N. J.
Ryan, Franklin W., Apt. B9, 73 St. Paul Pl., Brooklyn, N. Y. (1921)
Ryan, John A., Catholic Univesity, Washington, D. C. (1906)
Ryan, Michael A., College of St. Thomas, St. Paul, Minn. (1923)
Ryder, Oscar B., 102 Johnson Pl., Alexandria, Va. (1919)
Saby, R. S., Gettysburg College, Gettysburg, Pa. (1914)
Sachs, Alexander, 50 Pine St., New York City. (1928)
†Sacramento Free Public Library, Sacramento, Cal.
†Sacremento Junior College, Freeport Blvd., Sacramento, Cal.
†(Russell) Sage Foundation Library, 130 E. 22nd St., New York City.
Sage, Dean, 49 Wall St., New York City. (1910)
†St. Lawrence University Library, Canton, N. Y.
†St. Louis Public Library, St. Louis, Mo.
†St. Olaf College Library, Northfield, Minn.
†St. Paul Public Library, St. Paul, Minn.
†Saint Teresa, College of, Library, Winona, Minn.
Sakolski, A. M., 801 West End Ave., New York City. (1904)
†Salamanca High School, Salamanca, N. Y.
Salin, Edgar, Hardstr. 110, Basel, Switzerland. (1925)
†Salle de Travail, J. P. Lazard, Ecole Libre Sciences Politiques, 27 Rue Saint Guilliaume, Paris, France.
†San Francisco Public Library, Civic Center, San Francisco, Cal.
Sandage, Charles H., Simpson College, Indianola, Iowa. (1927)

SANDERS, J. T., Oklahoma A. and M. College, Stillwater, Okla. (1925)
SANDERS, THOMAS H., 17 University Hall, Cambridge, Mass. (1919)
SANDWELL, BERNARD K., 42 St. Mark St., Montreal, Canada. (1920)
SANFORD, GEORGE W., 404 Commerce Bldg., University of Illinois, Urbana, Ill. (1928)
*SANGAR, WILLIAM C., Care of E. T. Kerr, 14 Wall St., New York City. (1890)
SANO, ZENSAKU, Tokyo University of Commerce, Tokyo, Japan. (1899)
†SANTA ANA JUNIOR COLLEGE, W. Walnut St., Santa Ana, Cal.
†SANTA ANA PUBLIC LIBRARY, Santa Ana, Cal.
SAPOSNEKOW, JACOB, 1638 E. 7th St., Brooklyn, N. Y. (1921)
†SARGENT, C. W., 481 Dravo Ave., Beaver, Pa.
SARGENT, NOEL, National Association of Manufacturers, 50 Church St., New York City. (1924)
#SARGENT, ZIEGLER, 247 Church St., New Haven, Conn. (1911)
†SASKATCHEWAN, UNIVERSITY OF, Saskatoon, Sask., Canada.
SATO, SOZABURO, Nanyo-Saibai, Kiyo-Kwai, No. 14 Marunouchi, Nakadori, South Tokyo, Japan. (1911)
SATOH, K., Kajima Bank, Osaka, Japan. (1919)
#SAUTER, WILLIAM F., 2305 N. Broad St., Philadelphia, Pa. (1888)
†SAXTON, HENRY B., King St., Nottingham, England.
SAXTON, PIERRE W., 195 Broadway, New York City. (1918)
SCATTERGOOD, J. HENRY, Villa Nova, Pa. (1925)
SCHAFFNER, JOSEPH H., 1210 Astor St., Chicago, Ill. (1924)
SCHAFFNER, MARGARET A., 162 E. Superior St., Chicago, Ill. (1905)
SCHAPER, WILLIAM A., University of Oklahoma, Norman, Okla. (1926)
SCHAPIRO, JACOB, Suite 1425, 165 Broadway, New York City. (1919)
SCHEER, CHARLES H. E., 60 Wall St., New York City. (1925)
SCHIERMANN, JOHN J., 4116 Virginia Ave., St. Louis, Mo. (1925)
*SCHIFF, MORTIMER L., William and Pine Sts., New York City. (1916)
SCHLAGENHAUF, MILTON J., 316 Huntington Ave., Boston 17, Mass. (1922)
SCHLUTER, WILLIAM C., Wharton School, University of Pennsylvania, Philadelphia, Pa. (1920)
SCHMECKEBIER, L. F., 1444 Belmont St., Washington, D C. (1921)
SCHMEINITZ, DOROTHEA, Johnson Hall, 411 W. 116th St , New York City. (1928)
SCHMITMAN, L. SETH, 426 Fifth St., N. W., Washington, D. C. (1925)
SCHMITT, ALFRED C., Oregon State College, Corvallis, Ore. (1905)
SCHNEIDER, DAVID M., Room 1304, 114 Fifth Ave., New York City. (1928)
SCHNITZER, BLANCHE, 310 W. 86th St., New York City. (1925)
SCHOENFELD, WILLIAM A., 408 Atlantic Ave., Boston, Mass. (1923)
SCHOLZ, KARL W. H., Logan Hall, University of Pennsylvania, Philadelphia, Pa. (1921)
†SCHOOL OF MINES AND METALLURGY LIBRARY, Rolla, Mo.
SCHULTZ, HENRY, Faculty Exchange, University of Chicago, Chicago, Ill. (1921)
SCHWENNING, GUSTAV T., University of North Carolina, Chapel Hill, North Carolina. (1924)
†SCIENCE SOCIETY OF CHINA LIBRARY, Wonder Lane, Nanking, China.
SCOTT, D. R., University of Missouri, Columbia, Mo. (1923)
SCOTT, WILLIAM A., University of Wisconsin, Madison, Wis. (1888)
SCOTT, WILLIAM E., 1303 E. 60th St., Chicago, Ill. (1927)
SCOVILL, HIRAM T., 305 Commerce Bldg., Urbana, Ill. (1914)
SCOVILLE, GAD P., Department of Farm Management, Ithaca, N. Y. (1919)
SCOVILLE, JOHN W., Maxwell Motor Corporation, Detroit, Mich. (1923)
SCRIMSHAW, STEWART, Kearney and Trecker Company, Milwaukee, Wis. (1913)

Scroggs, William O., 68 Montague St., Brooklyn, N. Y. (1910)
*Scudder, Doremus, Claremont, Cal. (1890)
Scull, Charles O., Roland Park, Baltimore, Md. (1911)
Seaberg, Hugo, Raton, New Mexico. (1912)
*Seager, Henry R., Columbia University, New York City. (1888)
Searle, H. F., 25 Broad St., New York City. (1910)
Searles, Clair K., 2224 Maplewood Ave., Toledo, Ohio. (1928)
†Seattle Public Library, Periodical Department, 4th and Madison Sts., Seattle, Wash.
Seay, George J., Federal Reserve Bank, Richmond, Va. (1923)
Seay, Haynie H., Jr., University of Richmond, Richmond, Va. (1927)
†Secreatary, Board of Trade and Industries, Market St., Pretoria, South Africa.
†Secretary, Department of Industries, Kennedy House, Simla, India.
Secrist, Horace, 811 Gaffield Pl., Evanston, Ill. (1909)
†Security Trust and Savings Bank, Department of Research and Service, 5th and Spring Sts., Los Angeles, Cal.
See, Robert S., 437 E. College St., Shreveport, La. (1927)
Seeman, Albert L., A. and M. College of Texas, College Station, Texas. (1927)
Seerley, Homer, Iowa State Teachers College, Cedar Falls, Iowa. (1911)
Seko, K., Mitsui Bussan Kaisha, Ltd., Koraibashi, Dohri, Osaka, Japan. (1916)
Selekman, Ben M., 130 E. 22nd St., New York City. (1926)
*Seligman, Edwin R. A., 324 W. 86th St., New York City. (1886)
*Seligman, Jefferson, J. and W. Seligman and Company, New York City. (1910)
Seltzer, Lawrence H., College of City of Detroit, Cass and Warren Ave., Detroit, Mich. (1921)
#Serrill, Charles L., 424 Chestnut St., Philadelphia, Pa. (1910)
†Service Department, National Electric Light Ass'n., 420 Lexington Ave., New York City.
†Sevsapgostorg, Import Office, Department of Technical Information for G. I. P. N. S., Prosp. of 25, October 7/9, Leningrad, Russia
Shackleton, Arthur M., 658 Main Street, Riverside, Cal. (1924)
Shaffner, F. I., Brasenose College, Oxford University, Oxford, England. (1925)
Shann, Professor, University of West Australia, Perth, West Australia. (1922)
Sharfman, I. Leo, Department of Economics, University of Michigan, Ann Arbor, Mich. (1914)
Shaw, Albert, 55 Fifth Ave., New York City. (1886)
Shaw, Alejandro E., Charcas 682, Buenos Aires, Argentina, South America. (1918)
Shaw, A. W., Winnetka, Ill. (1910)
Shaw, Ernest R., 925 Michigan St., Wheaton, Ill. (1922)
Shaw, H. Y. R., 204 Tuck Hall, Hanover, N. H. (1925)
Shearman, Henry P., Miami University, Oxford, Ohio. (1927)
Sheets, Elmer A., Jr., 554 Palisade Ave., Yonkers, N. Y. (1916)
Shelledy, F. H., Tariff Commission, Washington, D. C. (1928)
Shelton, Henry W., Box 297, 1560 Torrey Pines Rd., La Jolla, Cal. (1916)
Shelton, W. Arthur, 616 Investment Bldg., Washington, D. C. (1919)
Sheppard, E. J., 329 Russell St., W. Lafayette, Ind. (1926)
Sherman, John H., Lake Forest College, Lake Forest, Ill. (1924)
Sherman, William R., DePauw University, Greencastle, Ind. (1923)
Sherrington, C. E. R., Transport Department, London School of Economics, London, England. (1923)
Shields, David M., Commerce Research Department, Goodyear Tire and Rubber Company, Akron, Ohio. (1925)

SHIELDS, HAROLD G., School of Commerce and Administration, University of Chicago, Chicago, Ill. (1927)
SHOEMAKER, JAMES H., Department of Economics, Brown University, Providence, R. I. (1925)
†SHOGAKUBU-KENKYUSHITSU, Waseda University, Waseda, Tokyo, Japan.
†SHOGYO KENKYUSHO, Kobe Higher Commercial School, Kobe, Japan.
SHORTLIFFE, J. MELBOURNE, 105 De Witt Pl., Ithaca, N. Y. (1925)
SHOUP, CARL, 509 W. 122 St., New York City. (1925)
†SHREVE MEMORIAL LIBRARY, Shreveport, La.
SHRIVER, GEORGE M., B. and O. R. R. Company, Baltimore, Md. (1911)
SHUGRUE, MARTIN J., Massachusetts Institute of Technology, Cambridge, Mass. (1914)
†SHULTZ, B. E., Personnel Department, N. Y. Stock Exchange, 13 Wall St., New York City.
SHULTZ, WILLIAM J., 118 Post Ave., New York City. (1925)
SIAO, SHUN C., Care of Tsung Tao Woo, Second Section, Currency Department, Ministry of Finance, Peking, China. (1923)
SIDLO, THOMAS L., 1307 Union Trust Bldg., Cleveland, Ohio. (1922)
SIGILMAN, SAMUEL, 717 Old South Bldg., Boston, Mass. (1916)
SIKES, EARL R., Dartmouth College, Hanover, N. H. (1916)
SILBERLING, NORMAN J., Department of Economics, University of California, Berkeley, Cal. (1915)
SILVER, FRANK L., Pier 30 South Wharves, Philadelphia, Pa. (1918)
SILVERMAN, A. G., Massachusetts Institute of Technology, Cambridge, Mass. (1925)
SILVERMASTER, GREGORY N., 2236 Durant Ave., Berkeley, Cal. (1928)
SIMKHOVITCH, VLADIMIR G., Columbia University, New York City. (1901)
†SIMMONS COLLEGE LIBRARY, Abilene, Texas.
†SIMMONS COLLEGE LIBRARY, 300 The Fenway, Boston, Mass.
SIMMONS, C. D., University of Texas, Austin, Texas. (1927)
SIMONDS, ALVAN T., 470 Main St., Fitchburg, Mass. (1922)
SIMONS, A. M., 2319 Sherman Ave., Evanston, Ill. (1925)
†SIMPSON COLLEGE LIBRARY, Indianola, Iowa.
SINCLAIR, HUNTLEY M., Washington University, St. Louis, Mo. (1928)
SINCLAIR, JOHN F., 5014 First Ave., S., Minneapolis, Minn. (1926)
SINGER, PAUL, Room 1706, 40 Exchange Pl., New York City. (1927)
†SINGER, PAUL, 21, Dounshire Hill, London, N. W. 3, England.
SINGLETON, GORDON G., 103 State Capitol, Atlanta, Ga. (1925)
†SIOUX CITY PUBLIC LIBRARY, Sioux City, Iowa.
SISSON, FRANCIS H., Guaranty Trust Company, 140 Broadway, New York City. (1919)
†SKIDMORE COLLEGE LIBRARY, Saratoga Springs, N. Y.
SKINNER, MACY M., 210 Commerce Hall, University of Washington, Seattle, Wash. (1921)
SLADE, MRS. HELEN S., 15 W. 55th St., New York City. (1923)
SLATER, J. E., American Brown Boveri Electric Corporation, Camden, N. J. (1925)
SLICHTER, SUMNER H., Institute of Economics, 26 Jackson Pl., Washington, D. C. (1920)
SMALL, CHARLES R., Hamilton, Mass. (1924)
SMART, LOUIS E., 470 W. 7th Ave., Columbus, Ohio. (1923)
SMEATON, J. V., 224 Pennington Ave., Passaic, N. J. (1911)
SMELZER, DAVID P., Proctor and Gamble Company, Cincinnati, Ohio. (1925)
†(A. K.) SMILEY PUBLIC LIBRARY, Redlands, Cal.
†SMITH COLLEGE LIBRARY, Northampton, Mass.
SMITH, AUGUSTUS, R. F. D. No. 2, Elizabeth, N. J. (1920)
SMITH, BRADFORD B., 3156 S. Beckett Rd., Shaker Hts., Cleveland, Ohio. (1924)
SMITH, CURRY E., New York University, Washington Square, New York City. (1928)

SMITH, C. O., Brookside, Bridgeport, Ohio. (1927)
SMITH, DANIEL T., Box 1195, Stanford University, Cal. (1928)
SMITH, ELDEN, 340 N. Painter, Whittier, Cal. (1926)
SMITH, EDGAR L., 22 William St., New York City. (1925)
SMITH, EDWARD L., 571 W. 139th St., New York City. (1925)
SMITH, FREDERICK M., P. O. Box 255, Independence, Mo. (1912)
SMITH, GUY C., 10410 S. Hoyne Ave., Chicago, Ill. (1924)
SMITH, HENRY A., 874 Broadway, New York City. (1928)
SMITH, HAL H., 1124 Ford Bldg., Detroit, Mich. (1911)
SMITH, H. L., 35 Harvard St., Worcester, Mass. (1921)
SMITH, HAROLD T., Fairfield, Iowa, (1925)
SMITH, HARRY W., Department of Economics, University of New Hampshire, Durham, N. H. (1924)
SMITH, JOSEPH E., Hiram College, Hiram, Ohio. (1927)
*SMITH, JACOB G., 519 Stolp Ave., Syracuse, N. Y. (1903)
SMITH, JAMES G., 206 Nassau St., Princeton, N. J. (1922)
SMITH, J. RUSSELL, Swarthmore, Pa. (1914)
SMITH, LAWRENCE, Wellesley College, Wellesley, Mass. (1923)
SMITH, MARK A., United States Tariff Commission, 7th and E Sts., N. W., Washington, D. C. (1912)
SMITH, MRS. MARION P., 140 Radnor Rd., Bryn Mawr. Pa. (1926)
SMITH, NELSON L., Parker Apartments, Hanover, N. H. (1924)
SMITH, R. E., 112 N. Greenleaf, Whittier, Cal. (1926)
SMITH, RICHARD R., 66 Fifth Ave., New York City. (1922)
SMITH, WALTER B., Wellesley College, Wellesley, Mass. (1925)
SMITH, W. MASON, Ohio State University, Columbus, Ohio. (1925)
†SMITLEY, ROBERT L., 204 S. Euclid Ave., Westfield, N. J.
SMYTH, WILLIAM H., "Fernwald," Berkeley, Cal. (1914)
SNADER, CRAIGE M., Chester Hts., Pa. (1926)
SNAVELY, TIPTON R., Monroe Hill, University, Va. (1918)
SNIDER, JOSEPH L., 1430 Mass. Ave., Cambridge, Mass. (1918)
#SNITZER, LOUIS A., 6 N. Clark St., Chicago, Ill. (1927)
SNODGRASS, KATHARINE, Stanford University, Cal. (1921)
SNOW, CHAUNCEY D., 5719 Chevy Chase Parkway, Chevy Chase, D. C. (1923)
SNYDER, CARL, 15 Nassau St., New York City. (1920)
†SOCIAL SERVICE LIBRARY, 18 Somerset St., Boston, 9, Mass.
†SOCIEDAD DE INGENIEROS DEL PERU, Attention of Bibliotecario, Lima, Peru, South America.
SODA, KIICHIRO, 44 Kami-niban-cho, Kojimachiku, Tokyo, Japan. (1916)
SOLLENBERGER, I. J., Faculty Exchange, University of Oklahoma, Norman, Okla. (1926)
SOLNTZEFF, E., Amtorg Trading Corporation, 165 Broadway, New York City. (1928)
#SOLOMONT, JAMES, 18 Tremont St., Boston, Mass. (1912)
SORRELL, VERNON G., 1565 Arch St., Berkeley, Cal. (1926)
SOULE, GEORGE, New Republic, 421 W. 21st St., New York City. (1923)
†SOUTH AUSTRALIA, PUBLIC LIBRARY OF, Adelaide, South Australia.
†SOUTH CAROLINA, UNIVERSITY OF, LIBRARY, Columbia, S. C.
†SOUTH DAKOTA FREE LIBRARY COMMISSION, Pierre, S. D.
†SOUTH DAKOTA STATE COLLEGE LIBRARY, Brookings, S. D.
†SOUTH DAKOTA, UNIVERSITY OF, LIBRARY, Vermillion, S. D.
SOUTHARD, FRANK A., JR., Apt. 2, 1137 High Court, Berkeley, Cal. (1927)
†SOUTHEASTERN STATE TEACHERS COLLEGE, Durant, Okla.
†SOUTHERN CALIFORNIA, UNIVERSITY OF, Los Angeles, Cal.

†Southern Methodist University, Dallas, Texas.
†Southern Oregon Normal School, Ashland, Ore.
†Southwest Missouri State Teachers College, Springfield, Mo.
†Southwest Texas State Teachers College, Library, San Marcos, Texas.
†Southwestern College Library, Winfield, Kans.
†Southwestern Louisiana Institute Library, Lafayette, La.
Southworth, Shirley D., College of William and Mary, Williamsburg, Va. (1921)
Spafford, William F., Conway Court, Troy, N. Y. (1925)
Spahr, Walter E., 8 Michigan Rd., Bellerose, L. I., N. Y. (1920)
Spalding, Arthur M., University of Pittsburgh, Pittsburgh, Pa. (1925)
Sparks, Earle S., University of South Dakota, Vermillion, S. D. (1923)
Spaulding, William E., Houghton, Mifflin Company, 2 Park St., Boston, Mass. (1920)
Spencer, Edward, Chase D-32, Soldiers Field Station, Boston, Mass. (1928)
Spencer, Norman, Birmingham-Southern College, Birmingham, Ala. (1928)
Splawn, Walter M. W., 2511 Wichita St., Austin, Texas. (1919)
†Spokane Public Library, Spokane, Wash.
Sprague, Oliver M. W., 86 Sparks St., Cambridge, Mass. (1900)
Spruill, Corydon P., Jr., Chapel Hill, N. C. (1921)
Spurrier, Leo, Kansas State Agricultural College, Department of Economics, Manhattan, Kans. (1925)
Squire, Andrew, 1857 Union Trust Bldg., Cleveland, Ohio. (1911)
Squires, Benjamin M., 223 W. Jackson Blvd., Chicago, Ill. (1919)
†Sria. de Hacienda, Almacen General, Mexico City, Mexico.
†Sri Minakshi College, Principal, Chidambarams, Madras, Pres. India.
†Staatl. Wiss. experim. Forschungsinstitut fur Siedlungswesen, Marxstrasse, Gorochowsky per 4, Moscow, Russia.
†Standard Statistics Company, Library, Foreign Trade Service, 47-49 West St., New York City.
†(Leland) Stanford Junior University, Library, Stanford University, Cal.
†Stanford University Graduate School of Business, Stanford University, Cal.
Staples, F. S., Peat, Marwick, Mitchell and Company, 717 H. W. Hellman Bldg., Los Angeles, Cal. (1922)
Stark, William, 2598 Filbert St., San Francisco, Cal. (1926)
Stark, Walter R., Willard Courts, 1916 17th St., N. W., Washington, D. C. (1920)
Starnes, George T., University, Va. (1924)
†State Normal College Library, Nachitoches, La.
†State Normal College Library, Dillon, Mont.
†State Normal School Library, Bellingham, Wash.
†State Normal School Library, Wayne, Neb.
†State Parliamentary Library, Exhibition Bldg., Melbourne, Victoria, Australia.
†State Teachers College, Librarian, Chico, Cal.
†State Teachers College, Library, Kirksville, Mo.
†State Teachers College, San Diego, Cal.
†State Teachers College Library, San Jose, Cal.
Stebbins, Lucy W., 2731 Durant Ave., Berkeley, Cal. (1920)
Stecker, Margaret L., 59 E. 87th St., New York City. (1917)
Stehman, J. Warren, University of Minnesota, Minneapolis, Minn. (1916)
Stein, Ernst, 1149 W. Congress St., Chicago, Ill. (1917)
Steiner, Royal S., 96 Avon Hill St., Cambridge, Mass. (1922)
Steiner, William H., 601 W. 115th St., New York City. (1916)
Steinhaeuser, Walter P., 508 First Ave., Asbury Park, N. J. (1926)

STEPHENS, GEORGE A., 3518 Northampton St., N. W., Washington, D. C. (1912)
STEPHENS, GEORGE W., Washington University, St. Louis, Mo. (1910)
STERN, ALFRED, 615 Crescent Court, Highland Park, Ill. (1920)
STERNS, WORTHY P., 1833 Lamont St., Washington, D. C. (1901)
STERRETT, J. E., 56 Pine St., New York City. (1909)
STEUART, WILLIAM M., 3725 Morrison St., N. W., Washington, D. C. (1898)
STEVENS, JAMES G., Box 454, Hanover, N.H. (1915)
STEVENS, WILLIAM H. S., Federal Trade Commission, Washington, D. C. (1923)
STEVENS, W. MACKENZIE, 35 Flower Ave., Takoma Park, D. C. (1926)
†(B. F.) STEVENS AND BROWN, 4 Trafalgar Square, London, England.
STEVENSON, ANDREW, JR., 156 Maple St., New Haven, Conn. (1928)
STEVENSON, RUSSELL A., University of Minnesota, Minneapolis, Minn. (1927)
STEWART, BRYCE M., Industrial Relations Counselors, Inc., 165 Broadway, New York City. (1921)
STEWART, CHARLES A., 1037 Munsey Bldg., Washington, D. C. (1919)
STEWART, CHARLES L., 707 W. Oregon St., Urbana, Ill. (1926)
STEWART, JOHN L., JR., 1703 New York Ave., N. W., Washington, D. C. (1925)
STEWART, ROBERT, JR., 844 S. Virginia, Reno, Nev. (1926)
STEWART, W. BLAIR, Reed College, Portland, Ore. (1927)
STEWART, WALTER W., 133 W. 11th St., New York City. (1920)
STIEFEL, CARL F., P. O. Box 80, Wall St. Station, New York City. (1917)
STINE, OSCAR C., Department of Agriculture, Office of Farm Management, Washington, D. C. (1918)
STITES, SARA H., Simmons College, Boston, Mass. (1912)
STITT, LOUISE, 5 Auburn Ave., Columbus, Ohio. (1925)
STOCKDER, ARCHIBALD H., School of Business, Columbia University, New York City. (1925)
STOCKING, COLLIS A., 522 W. 112th St., Apt. 63, New York City. (1927)
STOCKING, GEORGE W., 514 W. 33rd St., Austin, Texas. (1923)
†STOCKTON FREE PUBLIC LIBRARY, Stockton, Cal.
STOCKTON, FRANK T., University of Kansas, Lawrence, Kans. (1910)
STOCKWELL, MARVEL M., 4148 Normal Ave., Los Angeles, Cal. (1922)
STOKES, PAUL J., 4009 College Ave., Indianapolis, Ind. (1923)
STONE, CLARENCE N., 222 Prince St., West Newton, Mass. (1924)
STONE, DE LANO, 45 Prospect Pl., New York City. (1927)
STONE, NAHUM I., 42 Broadway, New York City. (1899)
STONE, RALEIGH W., University of Chicago, Chicago, Ill. (1920)
STONEQUIST, EVERETT V., Tusculum College, Greeneville, Tenn. (1928)
†STORTHINGETS BIBLIOTHEK, Oslo, Norway.
STOUFFER, WILLIAM H., Box 312, University of Virginia, University, Va. (1928)
†STOUT INSTITUTE LIBRARY, Menomonie, Wis.
STOUT, C. FREDERICK C., John R. Evans Company, 337 Arch St., Philadelphia, Pa. (1917)
STRATER, CHARLES G., 350 Madison Ave., New York City. (1912)
STRATTON, SAMUEL S., 27 Shaler Lane, Cambridge, Mass. (1928)
*STRAUS, JESSE I., Herald Sq., New York City. (1916)
#STRAUS, PERCY S., R. H. Macy and Company, Herald Sq., New York City. (1916)
#STRAUSS, ALBERT, 54 Wall St., New York City. (1924)
STREETER, THOMAS W., 120 Broadway, New York City. (1912)
STREIGHTOFF, FRANK H., 3343 N. New Jersey St., Indianapolis, Ind. (1910)
STROHMEYER, GEORGE W., 278 E. Water St., Milwaukee, Wis. (1918)
STRONG, BENJAMIN, Federal Reserve Bank, 33 Liberty St., New York City. (1913)
STRONG, EARL D., Grinnell College, Grinnell, Iowa. (1922)

Strong, Wendell M., 34 Nassau St., New York City. (1918)
Stroock, Sol M., 141 Broadway, New York City. (1909)
Sturgis, Arthur, 1523 L. St., Washington, D. C. (1923)
Subercaseaux, Guillermo, Santiago, Chile, South America. (1913)
Suits, W. E., 718 Forest Ave., Wilmette, Ill. (1919)
Sulzberger, Cyrus L., 305 West End Ave., New York City. (1904)
Sumner, C. W., Younsgtown Public Library, Youngstown, Ohio. (1925)
Sumner, Edward A., 149 Boulevard Haussman, Compagnie Nationale des Radiateurs, Paris, France. (1919)
Sumner, George S., Claremont, Cal. (1905)
Sumrall, F. H., 515 S. Center St., Grove City, Pa. (1927)
Sun, J. H., Care of W. K. Tang, Nankai University, Tientsin, China. (1927)
Surface, Frank M., 3612 Macomb St., N. W., Washington, D. C. (1923)
Sutcliffe, William G., Broad Meadow Rd., Route 3, Needham, Mass. (1921)
Suter, George A., New Canaan, Conn. (1913)
Sutherland, Edward G., University of Nevada, Box 2168, Reno, Nev. (1923)
Sutton, Harold G., George Washington University, Washington, D. C. (1923)
Swanson, Arthur E., 1055 First National Bank Bldg., Chicago, Ill. (1915)
Swanson, F. G., 411 C. N. B. Bldg., Wichita Falls, Texas. (1924)
Swanson, W. W., University of Saskatchewan, Saskatoon, Sask., Canada. (1913)
Swart, Jacob, Colorado College, Colorado Springs, Colo. (1920)
†Swarthmore College Library, Swarthmore, Pa.
Swayne, Alfred H., 224 W. 57th St., New York City. (1924)
Sweet, Homer N., 80 Federal St., Boston, Mass. (1919)
†Sweet Briar Institute, Sweet Briar, Va.
Sweetser, Philip S., 126 Moffat Rd., Waban, Mass. (1924)
Sweney, Fred W., 1921 Laurel Ave., St. Paul, Minn. (1915)
†Swift and Company Library, Union Stock Yards, Chicago, Ill.
§Swift, Harold H., Union Stock Yards, Chicago, Ill. (1924)
Swiggett, Glen L., 42 The Mendota, 20th St. at Kalorama Rd., Washington, D. C. (1924)
†Sydney, University of, Fisher Library, Sydney, N. S. W., Australia.
Symes, Don E., Harveyville, Kans. (1920)
†Syracuse Public Library, Syracuse, N. Y.
†Syracuse University Library, Syracuse, N. Y.
†Tacoma Public Library, Tacoma Ave., Tacoma, Wash.
Taft, Donald R., 1109 W. California St., Urbana, Ill. (1920)
Taggart, Herbert F., 1019 Granger Ave., Ann Arbor, Mich. (1923)
†Taiwan Higher Commercial School, Taihoku, Taiwan, Japan.
Takagi, Senjiro, No. 413, Shimo-Shibuya, Tokyo, Japan. (1914)
†Takamatsu-Koto-Shogyo-Gakko-Toshoka, Takamatsu, Kagawaken, Japan.
†Takaoka-Koto-Shogyo-Gakko, (Takaoka Higher Commercial School), Takaoka, Toyama-Ken, Japan.
Takei, D., Pay Corps, I. J. N., The Department of Navy, Tokyo, Japan. (1919)
Talley, Lynn P., Federal Reserve Bank, Dallas, Texas. (1924)
Tanenbaum, Jerome, 525 Broadway, New York City. (1917)
Tang, W. K., Nan Kai University, Tientsin, China. (1921)
Tannenbaum, Frank, 1724 Eye St., N. W., Washington, D. C. (1925)
Tapley, Gilbert H., Amos Tuck School, Hanover, N. H. (1920)
†Tarkio College Library, Tarkio, Mo.
Tator, Samuel W., 7 Crescent Park, New Haven, Conn. (1918)
Taussig, Benjamin J., 3747 Washington Ave., St. Louis, Mo. (1909)

TAUSSIG, FRANK W., Harvard University, Cambridge, Mass. (1887)
TAYLER, J. B., Yenching University, Department of Economics, Peking, West China. (1919)
TAYLOR, ALONZO E., Food Research Institute, Stanford University, Cal. (1920)
TAYLOR, AMOS E., University of Pennsylvania, Finance Department, Philadelphia, Pa. (1917)
TAYLOR, ALBION G., College of William and Mary, Williamsburg, Va. (1928)
TAYLOR, A. WELLINGTON, 143 Stanmore Pl., Westfield, N. J. (1916)
TAYLOR, CARL D., 111 S. Lake Ave., Albany, N. Y. (1920)
TAYLOR, EDWARD F., Glenham St., St. Albans, L. I., N. Y. (1924)
TAYLOR, FRED M., 527 Church St., Ann Arbor, Mich. (1892)
TAYLOR, GEORGE R., 5 Hitchcock St., Amherst, Mass. (1922)
TAYLOR, HORACE, 310 W. 106th St., New York City. (1924)
TAYLOR, HENRY C., Wieboldt Hall, Northwestern University, Chicago, Ill. (1903)
TAYLOR, JOSEPH E., Doane College, Crete, Neb. (1920)
TAYLOR, JAMES S., Department of Commerce, Washington, D. C. (1924)
TAYLOR, KENNETH W., McMaster University, Toronto, Ont., Canada. (1923)
TAYLOR, PAUL S., 119 South Hall, Berkeley, Cal. (1921)
TAYLOR, W. BAYARD, Rockford College, Rockford, Ill. (1923)
TAYLOR, WILLIAM G. L., 435 N. 25th St., Lincoln, Neb. (1894)
†TEACHERS COLLEGE, 2112 W. Grand Blvd., Detroit, Mich.
†TEACHERS LIBRARY, 204 N. Broadway, Los Angeles, Cal.
TEAD, ORDWAY, Harper and Brothers, 49 E. 33rd St., New York City. (1922)
†TECHNISCH-WIRTSCHAFTLICHES INSTITUT DER TECHNISCHE HOCHSCHULE, Munich, Germany.
†TECHNOLOGICAL COLLEGE, Lubbock, Texas.
TEEGARDEN, FRANK W., 1102 Central Ave., Wilmette, Ill. (1928)
TEMBY, J. L., Princeton University, Economics Department, Princeton, N. J. (1925)
†TEMPE STATE TEACHERS COLLEGE LIBRARY, Tempe, Ariz.
†TEMPLE UNIVERSITY, Broad and Berks Sts., Philadelphia, Pa.
TEMPLETON, HELEN M., 345 S. Spring St., La Grange, Ill. (1927)
TEMPLETON, W. L., Quaker Oats Company, 1600 Railway Exchange, Chicago, Ill. (1915)
TENER, KINLEY J., Sewickley, Pa. (1921)
†TENNESSEE, UNIVERSITY OF, LIBRARY, Knoxville, Tenn.
†TETSUDOSHO-UNYU-Kyoku-KOKUSAIKA, Department of Railways, Marunouchi, Tokyo, Japan.
†TEXAS AGRICULTURAL AND MECHANICAL COLLEGE LIBRARY, College Station, Texas.
†TEXAS AGRICULTURAL EXPERIMENT STATION, Division of Farm and Ranch Economics, College Station, Texas.
†TEXAS CHRISTIAN UNIVERSITY LIBRARY, Fort Worth, Texas.
†TEXAS LIBRARY AND HISTORICAL COMMISSION, State Library, Austin, Texas.
†TEXAS, UNIVERSITY OF, LIBRARY, J. E. Goodwin, Librarian, Austin, Texas.
†THIEL COLLEGE LIBRARY, Greenville, Pa.
*THOM, DECOURCY W., 119 E. Baltimore St., Baltimore, Md. (1900)
THOMAS, BROWN A., 626 S. Cochran Ave., Los Angeles, Cal. (1926)
THOMAS, GEORGE, University of Utah, Salt Lake City, Utah. (1917)
THOMAS, RAYMOND D., State Teachers College, Springfield, Mo. (1921)
THOMAS, ROLLIN G., 127 Pierce St., LaFayette, Ind. (1928)
THOMAS, ROSCOE L., P. O. Box 612, Butte, Mont. (1917)
THOMAS, WOODLIEF, 1827 Eye St., N. W., Washington, D. C. (1924)
THOMPSON, CHARLES M., College of Commerce, Urbana, Ill. (1913)
THOMPSON, C. WOODY, 204 University Hall, University of Iowa, Iowa City, Iowa. (1924)
THOMPSON, JOHN G., 504½ 2nd St., S. E., Washington, D. C. (1908)

THOMPSON, M. R., 1703 Clay St., Cedar Falls, Iowa. (1924)
THOMPSON, SAMUEL H., Iowa State College, Ames, Iowa. (1923)
THOMPSON, WILLIAM D., 526 Main St., Racine, Wis. (1918)
THOMSON, EDWARD H., 22 Greenacre Ave., Longmeadow, Mass. (1916)
THORNDIKE, EDWARD L., Teachers College, Columbia University, New York City. (1915)
THORNE, HALLETT W., 93 Indian Hill Rd., Winnetka, Ill. (1922)
THORNTON, RICHARD H., Henry Holt and Company, 1 Park Ave., New York City. (1928)
THORP, WILLARD L., Amherst College, Amherst, Mass. (1920)
†THRELKELD, A. L., 1153 S. Gaylord St., Denver, Colo.
THURBER, CHARLES H., 15 Ashburton Pl., Boston, Mass. (1901)
THURSTON, CHARLES S., 12 Coulter Bldg., Saranac Lake, N. Y. (1918)
TIEBOUT, CORNELIUS H., JR., 99 Commercial St., Brooklyn, N. Y. (1914)
TIFFANY, BURTON E., 205 Willow St., Vermillion, S. D. (1919)
TILLOTSON, LOYAL G., Bradley Polytechnic Institute, Peoria, Ill. (1927)
TILTON, ASA C., Raymond, N. H. (1920)
TILTON, HOWARD C., 614 E. Fern St., Redlands, Cal. (1923)
TINNES, DANA J., 620 7th Ave., S., Grand Forks, N. D. (1918)
TIPPETTS, CHARLES S., College of Commerce, University of Iowa, Iowa City, Iowa. (1920)
TITSWORTH, H. H., 120 Broadway, New York City. (1917)
TOBATA, SEIICHI, College of Agriculture, Tokyo Imperial University, Komaba, Tokyo, Japan. (1927)
TODD, ARTHUR J., 1011 Grove St., Evanston, Ill. (1921)
TODD, EDWIN S., Miami University, Oxford, Ohio. (1907)
†TOKYO BANKERS' ASSOCIATION, Marunouchi, Tokyo, Japan.
†TOKYO COMMERCIAL COLLEGE, Kanda, Tokyo, Japan.
†TOKYO IMPERIAL UNIVERSITY, Faculty of Economics, Tokyo, Japan.
†TOKYO-SHISEI-CHOSAKAI, Yurakukan, Yuraku-Cho, Kojimachi, Tokyo, Japan.
†TOKYO-TETSUDO-KYOKU-SHOMUKA, Tokyo Railway Bureau, Tokyo, Japan.
†TOLEDO PUBLIC LIBRARY, Toledo, Ohio.
†TOLEDO UNIVERSITY LIBRARY, 11th and Illinois Sts., Toledo, Ohio.
TOLLES, NEWMAN A., 10561 Longwood Drive, Chicago, Ill. (1925)
TOLLEY, H. R., Bureau of Agricultural Economics, Washington, D. C. (1924)
TOMKINS, CALVIN, 30 Church St., New York City. (1912)
TONKIN, ABRAHAM, 565 5th Ave., New York City. (1927)
TOOLAN, CYPRIAN A., Theodore Prince and Company, 120 Broadway, New York City. (1926)
TOPLIFF, SAMUEL, Suite 1501, 105 S. La Salle St., Chicago, Ill. (1918)
†TORONTO, UNIVERSITY OF, LIBRARY, Toronto, Ontario, Canada.
TOSDAL, HARRY R., 530 Morgan Hall, Soldiers Field, Boston, Mass. (1914)
†TOSHODO, No. 3, Tomecho, Shibaku, Tokyo, Japan.
TOSTLEBE, ALVIN S., 132 Foster Path, Wooster, Ohio. (1923)
†TOTTORI-KOTO-UOGYO-GAKKO, (AGRICULTURAL COLLEGE), Tottori, Tottoriken, Japan.
TOUGH, ROSALIND, 148 Hicks St., Brooklyn, N. Y. (1927)
TOWER, RALPH B., Elon College, N. C. (1925)
TOWLES, JOHN K., Chase National Bank, 57 Broadway, New York City. (1910)
TOWNE, EZRA T., University of North Dakota, Grand Forks, N. D. (1905)
TOWNER, RUTHERFORD H., 160 Broadway, Room 811, New York City. (1904)
†TOYO SEIMEI HOKEN GAISHA, (HOKOBU), Marunouchi, Kojimachi, Tokyo, Japan.
TRAFTON, GEORGE H., 76 N. Main St., Leominster, Mass. (1926)
TRANT, JAMES B., University Station, Austin, Texas. (1923)
TRAYLOR, M. A., 68 W. Monroe St., Chicago, Ill. (1921)

†Treasury Department's Bureau of Markets, Shanghai, China.
Treman, Robert H., Ithaca, N. Y. (1924)
†Treves Freres del Ali, Corso Umberto 1–174, Rome, Italy.
†Trinity College Library, Hartford, Conn.
†Trinity University Library, Waxahachie, Texas.
Troop, Horace W., Otterbein College, Westerville, Ohio. (1925)
Trout, Paul M., 10 S. 4th Ave., Mount Vernon, N. Y. (1923)
Truesdale, Leon E., 3429 Ordway St., N. W., Washington, D. C. (1920)
Truitt, Gray, Adelphi College, Brooklyn, N. Y. (1925)
Trumbower, Henry R., University of Wisconsin, Madison, Wis. (1905)
Tryon, Fred G., U. S. Geological Survey, Washington, D. C. (1920)
†Tsing Hua College, Librarian, Peking, China.
Tsui, F. Y., Care of N. T. Chao, Box 438, Teachers College, Columbia University, New York City. (1928)
Tucker, Donald Skeele, Massachusetts Institute of Technology, Cambridge, Mass. (1912)
Tucker, Lawrence A., 1015 National City Bank Bldg., Cleveland, Ohio. (1926)
Tucker, Robert H., Washington and Lee University, Lexington, Va. (1912)
Tucker, Rufus S., 222 Clark St., Westfield, N. J. (1912)
Tuckerman, Paul, 43 Cedar St., New York City. (1913)
†Tufts College Library, Tufts College, Mass.
Tugwell, Rexford G., Hamilton Hall, Columbia University, New York City. (1921)
†Tulane University Library, New Orleans, La.
†Tulsa Public Library, Tulsa, Okla.
†Tung Wen College, Shanghai, China.
Turnbull, Thomas, Jr., 835 Western Ave., Pittsburgh, Pa. (1922)
Turner, John R., New York University, Washington Sq., New York City. (1909)
†Tusculum College, Greenville, Tenn.
†Tuskegee Normal and Industrial Institute, Department of Records and Research, Tuskegee Institute, Ala.
Tuttle, Charles A., 222 College St., Middletown, Conn. (1887)
Tuttle, F. W., 605 S. Lincoln Ave., Urbana, Ill. (1922)
Tuttle, Pierson M., 25 Nassau St., New York City. (1915)
Tyler, Cornelius B., 30 Church St., New York City. (1913)
†Tyrrell Public Library, Beaumont, Texas.
Tyson, Francis, University of Pittsburgh, Pittsburgh, Pa. (1918)
Uchiike, Renkichi, Tokyo Higher Commercial College, Tokyo, Japan. (1916)
†Ufficio Studi e Statistica del Comune di Milano, Via Omenoni No. 1, Milano, (103) Italy.
†Ukrainisches Marx-Lenin Institut, Charkow, Russia.
Ulmar, Mrs. Valentina, 2601 S. Grand Ave., Los Angeles, Cal. (1927)
Ulmer, Carl D., Koppers Company Laboratories, Mellon Institute, Pittsburgh, Pa. (1926)
†Union College Library, Schenectady, N. Y.
†Union High School, District #1, Mount Vernon, Wash.
†Union High School and Junior College Library, Fullerton, Cal.
†U. S. Chamber of Commerce, 1615 H. St., N. W., Washington, D. C.
†U. S. Department of Agriculture, Washington, D. C.
†U. S. Department of Labor Library, Washington, D. C.
†U. S. Tariff Commission, Washington, D. C.
†University, Edmund St., Birmingham, England.
†University Club Library, Fifth Ave. and 54th St., New York City.

†University Farm Library, Davis, Cal.
†University Library, Adelaide, South Australia.
†University Library, Librarian, Cambridge, England.
†University Library, Nanking, China.
†University Library, Reno, Nev.
†Universytet Jana Kazimierza Bibljoteka, Lwow, Poland.
Updike, Harold W., 37 Wall St., New York City. (1926)
#Usher, Abbott P., 38 Lake View Ave., Cambridge, Mass. (1911)
†Utah Agricultural College Library, Logan, Utah.
†Utah, University of, Library, Salt Lake City, Utah.
†Vail Memorial Library, Lincoln University, Pa.
Vaile, Roland S., 87 Olin Ave., Minneapolis, Minn. (1924)
Valentine, Frederic P., 195 Broadway, New York City. (1924)
Valentine, Roger W., Halsey, Stuart and Company, 201 S. La Salle St., Chicago, Ill. (1924)
Valgren, Victor N., 1514 17th St., N. W., Washington, D. C. (1910)
Van Deusen, Walter M., Banco Central de Chile, Casilla 967, Santiago, Chile. (1927)
Van Iseghem, Angela F., St. Louis University, St. Louis, Mo. (1928)
Van Kleeck, Mary, 130 E. 22nd St., New York City. (1916)
Van Metre, Thurman W., 152 Ames Ave., Leonia, N. J. (1916)
Van Pelt, Henry W., 1855 Market St., Harrisburg, Pa. (1927)
Van Riper, Christian, Department of Economics, Wittenberg College, Springfield, Ohio. (1919)
Van Sickle, John V., Department of Economics, University of Michigan, Ann Arbor, Mich. (1924)
†Vancouver Public Library, Vancouver, B. C., Canada.
†Vanderbilt University Library, Nashville, Tenn.
Vanderblue, Homer B., 1430 Massachusetts Ave., Cambridge, Mass. (1911)
Vanderlip, Frank A., Room 701, 111 Broadway, New York City. (1904)
Vaughan, Ernest H., 2 Germain St., Worcester, Mass. (1918)
Vaughan, Floyd L., Economics Department, University of Oklahoma, Norman, Okla. (1916)
Vaughan, Lilah M., 400 Crescent St., Waltham, Mass. (1923)
Vaughan, Roger T., Cook County Hospital, Chicago, Ill. (1918)
Vaughn, Grover C., Edge Apartments, Bryan, Texas. (1927)
†Ventura County Free Library, Ventura, Cal.
†Vermont State Library, Montpelier, Vt.
†Vermont, University of, Burlington, Vt.
*Vernam, Clarence C., 79 7th Ave., New York City. (1922)
Verrill, H. M., 72 Bowdoin St., Portland, Me. (1909)
†Vichasask, Luang Boonpalit, 5804 Trock Rong Koam, Bangkok, Siam.
Vickers, Enoch H., 748 University Terrace, Morgantown, W. Va. (1902)
Vickers, Leslie, 292 Madison Ave., New York City. (1925)
†Victoria University College, Wellington, New Zealand.
†Victoria University Library, Manchester, England.
Villaseñor, Eduardo, P. O. Box 2479, Mexico, D. F. (1927)
Villegas, Daniel C., 414 Stewart Ave., Ithaca, N. Y. (1925)
Vincent, George E., 61 Broadway, New York City. (1901)
Vincent, Melvin J., 1616 N. Mariposa Ave., Los Angeles, Cal. (1925)
Viner, Jacob, Faculty Exchange, University of Chicago, Chicago, Ill. (1920)
Vinson, R. E., Western Reserve University, Cleveland, Ohio. (1920)

†Virginia Polytechnic Institute, Blacksburg, Va.
†Virginia State Library, Richmond, Va.
†Virginia, University of, Library, University, Va.
Virtue, G. O., University of Nebraska, Lincoln, Neb. (1911)
Vita, Vicente, 1104 Vermont Ave., Washington, D. C. (1927)
Vivian, W. S., 72 W. Adams St., Chicago, Ill. (1925)
Vockel, Stewart, S. M. Vockel and Company, 506 Keystone Bank Bldg., Pittsburgh, Pa. (1919)
Voegelin, F. E., Stony Brook, L. I., N. Y. (1912)
Vogt, Paul L., Extension Division, Oklahoma University, Norman, Okla. (1909)
Volin, Lazar, Brookings School, 1724 Eye St., N. W., Washington, D. C. (1923)
Von Tungeln, George H., Iowa State College, Ames, Iowa. (1916)
Voorhies, Edwin C., College of Agriculture, University of California, Berkeley, Cal. (1925)
Vose, Harold P., Room 3706, 120 Broadway, New York City. (1919)
Vrooman, Carl S., 701 E. Taylor St., Bloomington, Ill. (1911)
†Wabash College Library, Crawfordsville, Ind.
†Wada, Isaburo, Care of Inosuke Wada, 3-chome, Minamihorie-Shimodori, Nishiku, Osaka, Japan.
Wagner, Frederick C., University of Minnesota, School of Business, Minneapolis, Minn. (1923)
Wagner, Napoleon, 1101 Emerson St., Denver, Colo. (1915)
Waite, Warren C., Division of Agricultural Economics, University Farm, St. Paul, Minn. (1924)
†Wakayama Higher Commercial School, Wakayama, Japan.
†Wake Forest College Library, Wake Forest, N. C.
#Walden, Mrs. Percy T., 210 St. Ronan St., New Haven, Conn. (1901)
Wales, Edward M., Graduate School of Business Administration, Harvard University, Soldiers Field, Boston, Mass. (1926)
Walker, Francis, Federal Trade Commission, Washington, D. C. (1895)
Walker, John E., 1001 15th St., Washington, D. C. (1921)
Walker, Thaddeus, Detroit Club, Detroit, Mich. (1913)
Wallace, Benjamin B., U. S. Tariff Commission, Washington, D. C. (1923)
Wallace, Laurence W., 26 Jackson Pl., Washington, D. C. (1926)
Wallace, William H., Jens, Mont. (1924)
†Wallace's Farmer, Des Moines, Iowa.
Walradt, Henry F., Ohio State University, Columbus, Ohio. (1911)
Walrath, Frank J., Box 284, Gambier, Ohio. (1923)
*Walsh, Correa M., Bellport, L. I., N. Y. (1901)
Walsh, Edmund A., Georgetown University, Washington, D. C. (1924)
Walsh, James F., 1019 Williamson Bldg., Cleveland, Ohio. (1925)
Walter, Edwin J., 375 Park Ave., New York City. (1917)
*Walters, H., 71 Broadway, New York City. (1921)
Waltersdorf, Maurice C., 417 Locust Ave., Washington, Pa. (1925)
*Warburg, Felix M., 52 William St., New York City. (1901)
Warburg, Paul M., 17 E. 80th St., New York City. (1919)
Warburton, Clark A., Rice Institute, Houston, Texas. (1922)
Ward, Frank B., 914 Fulton St., Chester, Pa. (1924)
Ward, Gordon H., 16 Bridle Way, Palisade, N. J. (1927)
Ward, John, Atlanta Public School, Atlanta, Texas. (1927)
Ward, John W., Canadian Council of Agriculture, 404 Bank of Hamilton Bldg., Winnipeg, Manitoba, Canada. (1923)

Wardwell, Allen, 44 Wall St., New York City. (1912)
Warfield, George A., 2131 S. Columbine St., Denver, Colo. (1912)
Warne, Colston E., University of Pittsburgh, Pittsburgh, Pa. (1927)
Warne, Frank J., Mills Bldg., 17th St. and Pennsylvania Ave., Washington, D. C. (1915)
#Warner, Philip J., 15 E. 26th St., New York City. (1911)
Warren, Bentley W., 30 State St., Boston, Mass. (1908)
Warren, Fiske, Priest Cottage, Harvard, Mass. (1915)
Warren, G. F., R. D. 2, Ithaca, N. Y. (1918)
Warren, Mrs. Howard C., 133 Liberty Pl., Princeton, N. J. (1912)
†Warsaw Academy of Commerce, Koszykowa St. 9, Warsaw, Poland.
Warshow, Herman T., National Lead Company, 111 Broadway, New York City. (1916)
†Waseda University Library, Waseda, Tokyo, Japan.
†Washington and Jefferson College, Washington, Pa.
†(George) Washington University Library, Washington, D. C.
†Washington University Library, St. Louis, Mo.
†Washington, State College of, Library, Pullman, Wash.
†Washington, University of, Library, Seattle, Wash.
Wasserman, Max J., Commerce Bldg., University of Illinois, Urbana, Ill. (1920)
Watanabe, Paul S., 693 Fatsukamachi, Mishimamachi, Tagata County, Shizuoka Prefecture, Japan. (1927)
Watkins, George P., Federal Trade Commission, Washington, D. C. (1901)
Watkins, Gordon S., University of California, Southern Branch, Los Angeles, Cal. (1917)
Watkins, John B., 6450 Kenwood Ave., Chicago, Ill. (1923)
Watkins, Leonard L., Department of Economics, University of Michigan, Ann Arbor, Mich. (1922)
Watkins, Myron W., New York University, University Heights, New York City. (1915)
Watkins, Ralph J., 2615 University Ave., Austin, Texas. (1923)
Watrous, George D., Jr., U. S. Tariff Commission, 7th and E. Sts., Washington, D. C. (1924)
Watson, Frank D., Haverford, Pa. (1922)
Waugh, Albert E., Connecticut Agricultural College, Storrs, Conn. (1928)
†Waukegan Public Library, Waukegan, Ill.
Weatherly, Ulysses G., University of Indiana, Bloomington, Ind. (1901)
Webb, George D., 1423 Insurance Exchange, Chicago, Ill. (1917)
Weber, Adna F., 8521 114th St., Richmond Hill, L. I., N. Y. (1896)
Weber, Gustavus A., Cosmos Club, Washington, D. C. (1893)
Weber, Georges M., School of Business Administration, University of Oregon, Eugene, Ore. (1923)
Weber, Harry F., Albright College, Myerstown, Pa. (1928)
Weeks, Rufus W., 346 Broadway, New York City. (1895)
Wehrwein, George S., Wieboldt Hall, Northwestern University, Chicago, Ill. (1917)
Wei, Tingsheng S., Bank of China, Nanking, China. (1921)
Weidler, Walter C., College of Commerce and Journalism, Ohio State University, Columbus, Ohio. (1922)
Weil, A. Leo, 821 Frick Bldg., Pittsburgh, Pa. (1911)
Weisman, Russell, Adelbert College, Cleveland, Ohio. (1913)
Weiss, George, Hoquet and Company, Inc., 72 Wall St., New York City. (1924)
Weiss, HarryB., 19 N. 7th Ave., New Brunswick, N. J. (1924)
Welch, George T., Massachusetts Institute of Technology, Cambridge, Mass. (1926)
Weld, Louis D. H., H. K. McCann Company, 285 Madison Ave., New York City. (1910)
Weld, William E., 513 Hamilton Hall, Columbia University, New York City. (1921)

WELLES, FRANCIS R., Bourre, Loir and Cher, France. (1888)
†WELLESLEY COLLEGE LIBRARY, Wellesley, Mass.
WELLINGTON, C. OLIVER, 110 State St., Boston, Mass. (1912)
WELLMAN, HILLER C., City Library Association, Springfield, Mass. (1908)
WELLMAN, HARRY R., Dartmouth College, Hanover, N. H. (1920)
†WELLS COLLEGE LIBRARY, Aurora, N. Y.
WELSH, HERBERT S., 132 S. 4th St., Philadelphia, Pa. (1919)
WENDT, EDWIN F., Cosmos Club, Washington, D. C. (1915)
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†YOKOHAMA-KOTO-SHOGYO-GAKKO, Higher Commercial School, Yokohama, Japan.
YOUNG, ALLYN A., London School of Economics, Houghton St., Aldwych, London, W. C. 2, England. (1900)
YOUNG, ARTHUR B., 84 Marion St., Seattle, Wash. (1924)
YOUNG, ARTHUR N., Department of State, Washington, D. C. (1911)
YOUNG, B. F., 140 West St., New York Telephone Company, New York City. (1924)
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YOUNG, OWEN D., General Electric Company, 120 Broadway, New York City. (1918)
YOUNGBLOOD, B., Experiment Station, Agricultural and Mechanical College, College Station, Texas. (1921)
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†ZAHN AND JAENSCH, Waisenhausstrasse 10, Dresden-A, Germany.
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Howard, E. D.
Ives, H. S.
Kellogg, L. S.
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McJohnston, H.
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Ray, R. J.
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Todd, A. J.

Wilmette

Suits, W. E.
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Winnetka

Clemen, R. A.
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Cleveland, W. C.
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Mills, M. C.
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Rawles, W. A.
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Crawfordsville

Leonard, J. L.
Wabash College Library

Earlham

Earlham College Library

Evansville

Jackson, J. R.

Fort Wayne

Fort Wayne Public Library

Franklin

Dodd, J. H.
Franklin College Library

Goshen

Correll, E. H.

Greencastle

De Pauw University Library
Long, D.
Mitchell, W. F.
Sherman, W. R.

Hanover

Hanover College Library
Woodworth, A. H.

Indianapolis

Beckner, E. R.
Butler College Library
Indiana State Library
Indianapolis Public Library
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Putnam, J. W.
Stokes, P. J.
Streightoff, F. H.

Lafayette

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Paulson, W. E.
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Lexington

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Muncie

Muncie Public Library

Notre Dame

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North Manchester

Manchester College Library

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Edwards, R. E.

Terre Haute

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Topeka

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Danville

Centre College

Georgetown

Griffin, A. G.

Goshen

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Lexington

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Deckerson, W. E.
Jennings, W. W.
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Murray

Murray State Normal School Library

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Eastern Kentucky Normal School Library

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New Hill Memorial Library

Lafayette

Southwestern Louisiana Institute Library

Nachitoches

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See, R. S.
Shreve Memorial Library

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Gilbert, H. N.
Goodale, F. G.
Gragg, C. I.
Gras, N. S. B.
Hanson, A. W.
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Hill, D. M.
Jackson, D. C.
Jones, M. F.
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Wellington, C. O.
White, W. L.
Wilson, E. B.
Winslow, W. C.

Brookline

Eaves, L.
Gay, E. F.
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Harvard

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Haverhill Public Library

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Lynn

Pinkham, A. W.

Malden

Lewis, L. B.

Manchester

Hanks, Mrs. C. S.

Medford

Allen, R. L.

Milton

Cobb, J. C.

Needham

Sutcliffe, W. G.

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Langshaw, W. H.
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Vaughan, L. M.

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Smith, H. H.
Teachers College
Walker, T.

East Lansing

Butterfield, K. L.
Clayton, C. F.
Haber, W. G.
Hedrick, W. O.
Horner, J. T.
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Wyngarden, H.

Flint

Carey, M.
Flint Public Library

Grand Rapids

Baxter, H. F.
McNaughton, F.
Ranck, S. H.
Wilcox, D. F.

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Howell

Dailey, D. M.

Iron River

Byers, I. W.

Kalamazoo

Bigelow, H. F.
Griffith, E. C.
Kalamazoo Public Library

Lansing

Michigan State Library

Marquette

Northern State Normal School

Muskegon

Hackley Public Library

Olivet

Olivet College Library

Ontonagon

Hawley, T. D.

Port Huron

Ellis, R. G.

Royal Oak

Royal Oak Public Library

Saginaw

Hoyt Public Library

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Duluth Public Library
Matteson, J. S.

Hibbing

School Library

Mankato

Mankato Free Public Library

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Bullis, H. A.
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Gunnarson, A. B.
Hansen, A. H.
Hartshorne, R.
Heilman, E. A.
Hendel, J.
Kozelka, R. L.
Kuhlmann, C. B.
Lahee, A. W.
Livingston, G.
Marget, A. W.
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Myers, W. R.
Ostlund, H. J.
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Reighard, J. J.
Sinclair, J. F.

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Boettler, H. F.
Brookings, R. S.
Cable, J. R.
Carr, J. A.
Cummings, M. W.
Davis, J. L.
Fuchs, R.
Gardner, F. D.
Gephart, W. F.
Grey, D. L.
Harris Teachers College
Jones, B.
Kotany, L.
Krebs, W. S.
Lippincott, I.
Loeb, I.
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Mangold, G. B.
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Perkins, A. T.
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Sinclair, H. M.
Stephens, G. W.
Taussig, B. J.
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Springfield

Southwest Missouri State Teachers College
Thomas, R. D.

Tarkio

Tarkio College Library

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Webster Groves

Dickie, W. E.

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Bozeman

Hamilton, J. M.
Montana Agricultural Experiment Station
Wilson, M. L.

Butte

Thomas, R. L.

Dillon

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Glendive

Perrigo, H. W.

Great Falls

Hurd, G. E.

Helena

Helena Public Library

Jens

Wallace, W. H.

Missoula

Buckhous, M. G.
Crumbaker, C.
Howd, C. R.

NEBRASKA

Clarks

Beardsley, C.

Crete

Taylor, J. E.

Curtis

Morse, C. K.

Edgar

Avery, H. G.

Fairbury

Henderson, B.

Hastings

Hastings College Library

Lincoln

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Bullock, T. T.
Filley, H. C.
Fullbrook, E. S.
Kirshman, J. E.
Le Rossignol, J. E.
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Englewood

Du Bois, C. G.
Hardy, G. E.

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Howe, C. B.

Hoboken

Bernheim, G. B.

Jersey City

Greening, C. H.
Jarvis, N. L.
Jersey City Free Library

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Van Metre, T. W.

Madison

MacFadden, F. A. R.

Montclair

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Hollingshead, G. G.
Lutz, C. A.
Powell, W. H.
Russell, S. A., Jr.

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Rutgers College Library
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West, M.

Newark

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Prudential Insurance Company of America
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Riley, A. J.

Orange

Roth, M.

Palisade

Ward, G. H.

Passaic

Bivins, P. A.
Smeaton, J. V.

Princeton

Brown, J. D.
Cline, D. C.
Dell, B. N.
Dixon, F. H.
Duncan, A. J.
Fetter, F. A.
Fetter, F. W.
Foerster, R. F.
Fournier, L. T.
Graham, F. D.
Herling, R. R.
Holmes, R. S.
Howard, S. E.
Jarrett, J. M.
Kemmerer, D. L.
Kemmerer, E. W.
Lawrence, J. S.
McCabe, D. A.
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McIsaac, A. M.
Modlin, G. M.
Piquet, H. S.
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Temby, J. L.
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Ridgewood

Dillon, A. V.
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Powell, W.
Woodworth, L. D.

Tenafly

Agger, E. E.

Trenton

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Moot, A.
Redfield N. M.

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Leven, M.

Forest Hills (L. I.)

Hudson, W. M.

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Huntington (L. I.)

Williams, T. S.

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Ithaca

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Garrett, S. S.
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Pearson, F. A.
Reed, H. L.
Ross, H. A.
Scoville, G. P.
Shortliffe, J. M.
Treman, R. H.
Villegas, D. C.
Warren, G. F.
Willcox, W. F.

Jackson Heights

Richter, F. E.

Jericho (L. I.)

Ellis, R.

Keuka Park

Belden, M.

Larchmont

Auld, G. P.
Roberts, G. E.

Long Island City (L. I.)

Calman, H. L.

Mt. Vernon

Austin, C. B.
Hill, R. T.
Mt. Vernon Public Library
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Creswell, C. F.
Crosby, G. R.
Cumberland, W. W.
Cutcheon, F. W. M.
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Davenport, D. H.
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Davis, P. V.
De Forest, R. W.
Dennis, W. M.
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Dix, S. M.
Dodd, D. L.
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Dohr, J. L.
Donald, W. J. A.
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Draper, E. G.
Dunkman, W. E.
Edwards, G. W.
Effinger, R. C.
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Eisner, M.
Eliot, C.
Elkus, A. I.
Elliott, H.
Ellis, G. W.
Erlanger, A.
Evenchick, E.
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Franklin, F.
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Frew, W. E.
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Friedman, E. M.
Friedman, H. G.
Frissell, A. S.
Fry, C. L.
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Garvan, F. P.
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Moore, J. H.
Moorhouse, H. W.
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Olson, L. H.
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O'Neill, G.
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Page, K.
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Pasel, L.
Patton, E. B.
Pavloff, J. M.
Peabody, G. F.
Peabody, W. R.
Peebles, A.
Person, H. S.
Pforzheimer, A.
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Plimpton, G. A.
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Robinson, S.
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Seligman, E. R. A.

Pelham

McCarty, H. C.

Pelham Manor

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Port Washington

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Poughkeepsie

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Richmond Hill (L. I.)

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Rochester

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Saratoga Springs

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Stapleton

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Hanaway, R. C.

Stony Brook (L. I.)

Voegelin, F. E.

Syracuse

Bice, H. E.
Cross, M. C.
Hanger, J. H.
Hench, W. M.
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Peters, I. L.
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Fink, C. W.
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Bluffton

Bluffton College Library

Bridgeport

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Cincinnati

Appleby, T. W.
Bettman, A.
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Byrne, J. M.
Cincinnati Public Library
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Du Brul, E. F.
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McBurney, B. T.
Osborn, G. P.
Patton, H. S.
Pollak, Mrs. J. A.
Roden, E. A.
Smelser, D. P.
Wolfe, F. E.

Cleveland

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The American Economic Review

Vol. XVIII, No. 2 SUPPLEMENT June, 1928

Handbook

of the

American Economic Association

1928

Publication Offices: Menasha, Wisconsin, and Evanston, Illinois

Executive Office: American Economic Association, Northwestern University, Evanston, Illinois

Entered at the Post Office, at Menasha, Wisconsin, as second-class matter

Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized June 11, 1921

Price, in paper, $2.00